Telephony

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THE LUSITANIA'S TELEPHONE SYSTEM

Description of Exchange on the Great Ocean Liner that Broke All Trans-Atlantic Speed Records

By E. M. Rothelle

WHEN the mammoth turbine steamship Lusitania glided up to her dock at New York September 13, after breaking all records for swift voyages across the Atlantic, connection was at once made between the private branch telephone exchange on board and the New York exchange, enabling the passengers who had made the wonderful trip to telephone their friends in the city before leaving the vessel. This great ocean greyhound possesses many striking features which make her the very acme of shipbuilding. The Lusitania stands at the head of her class, and nothing was omitted to make the vessel the embodiment of the twentieth century skill and efficiency in ocean travel. Of course, that means the Lusitania must have a telephone plant which surpasses anything of the kind ever before attempted, and the following paragraphs and illustrations describe it.

Both the Lusitania and her sister Cunarder, the Mauretania, have a complete telephone exchange on board. While the vessels are at sea communication is possible between any parts of the immense boats, and such is needed, for the Lusitania is 790 feet long and 88 feet broad. Her crew numbers 900 and she carries enough passengers to make a small-sized city. Down in her hold she carries 7,000 tons of coal for a trip and her displacement on load draft is 45,000 tons. When these great crafts are moored at a dock telephone connection can be made with the exchanges of Liverpool or New York, as stated, permitting persons on board to converse with their friends many miles away.

This is the first instance of a complete private branch exchange being installed on an ocean liner giving regular exchange facilities, and telephone men believe this opens up a new field of great importance for telephone service.

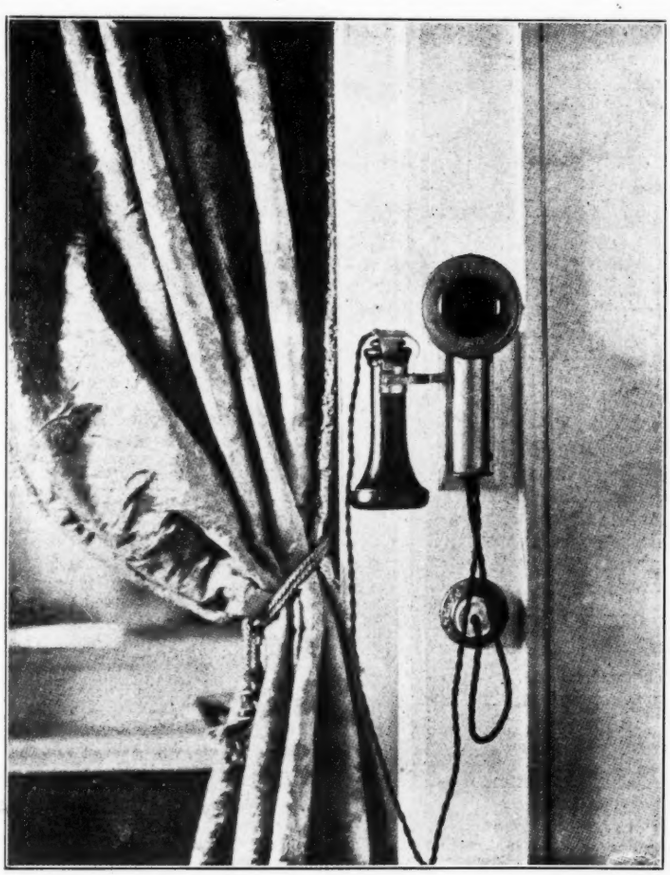

Figure 1—Telephone instrument showing special clip for receiver.

The installation on the Lusitania consists of eighty-nine stations and ten exchange lines which are connected to a switchboard having a capacity for 200 stations and twenty exchange lines. The telephone instruments are placed in the regal and first-class staterooms, in the cabins of the ship's officers, doctor, purser and chief steward, and in the bureau. The telephones are of a handsome design. The instruments are of special construction and of the design shown in Figure 1, the body being of metal, gilded or silvered as the case may be to correspond with the decoration of that particular cabin. The switchhook is designed to grip the receiver firmly and prevent the latter from falling or knocking against the side of the instrument when the ship rolls. That part of the switchhook which holds the receiver is also pivoted horizontally, so that the receiver may swing with the ship's motion and always tend to maintain the active length of the lever. The purpose of this is that if this provision were not made the lever would not lift with the rolling of the ship, on account of the shortening of the horizontal distance between the center of gravity of the receiver and the fulcrum of the lever. The bell, induction coil and condenser are all fitted in a box having a metal cover enameled white. In most cases the bell boxes are placed entirely out of sight, and the wiring between them and the instruments is run behind the paneling of the cabins.

Figure 2 shows the switchboard which is located in a room amidships. The switchboard is a special design, having the power aboard placed on the top. The distributing frame is of the vertical type, fitted with 120 pairs of fuses in the upper part, and 120 pairs of arresters and heat coils in the lower part. The whole is enclosed in a handsome

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mahogany cabinet, and the space between the fuses and arresters is used as a cross-connecting field. The equipment includes two ringing machines which are run from the ship's supply. These are enclosed in a sound-proof case and are controlled by switches on the power board. Two batteries, each consisting of thirteen accumulator cells, are provided to supply current for the operation of the switchboard. These cells are situated conveniently in a special case near the switchroom, and are charged direct from the ship's supply (110 volts) through a reducing resistance consisting of four 32-candle-power lamps. The charging

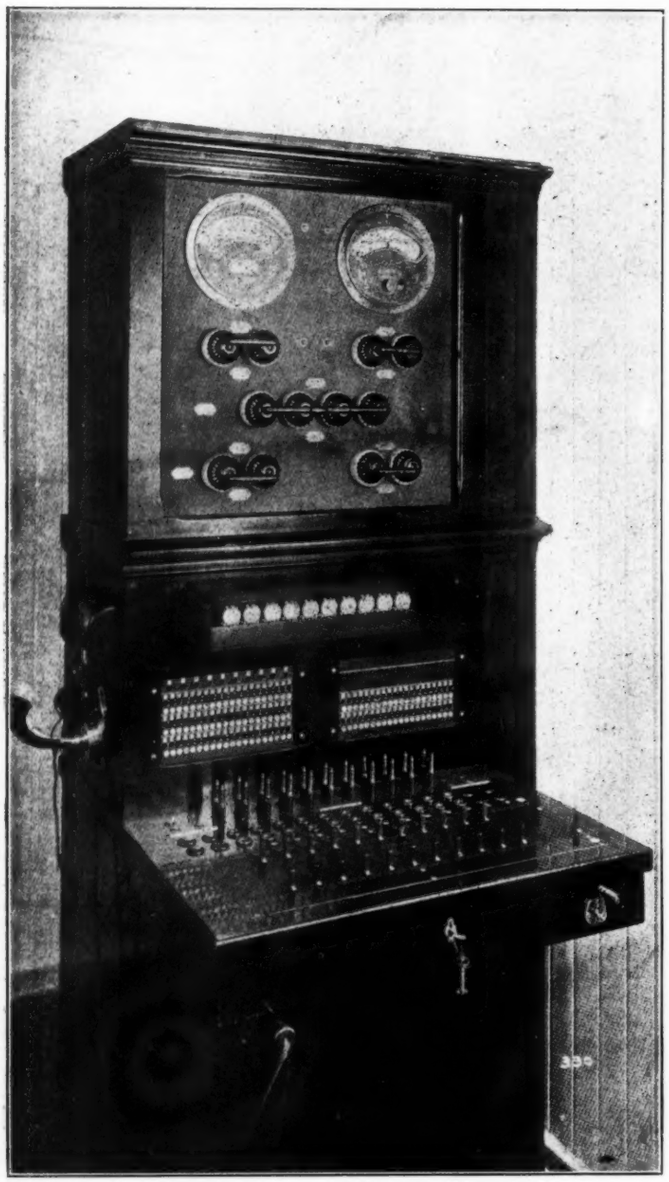


Figure 2—Switchboard on Steamer Lusitania.

and discharging of the batteries is controlled from the power board.

Figure 3 shows one of the regal staterooms fitted with telephone instrument which is located at the farther end of the apartments, between the doorway and the dresser.

On reference to the extension line circuit (Figure 4) it will be seen that calling is effected by means of lamps, but without relays. As the lines on the ship were uniformly of low resistance, it was found to be quite practicable to light the 24-volt calling lamp by means of the current from a 26-volt battery passing through the instrument when the receiver was removed.

The exchange junction lines terminate on self-restoring

Figure 3—Regal state room with wall telephone.

drops. Figure 5 shows the circuit of a line from a central battery main exchange. In the case of an exchange junc-

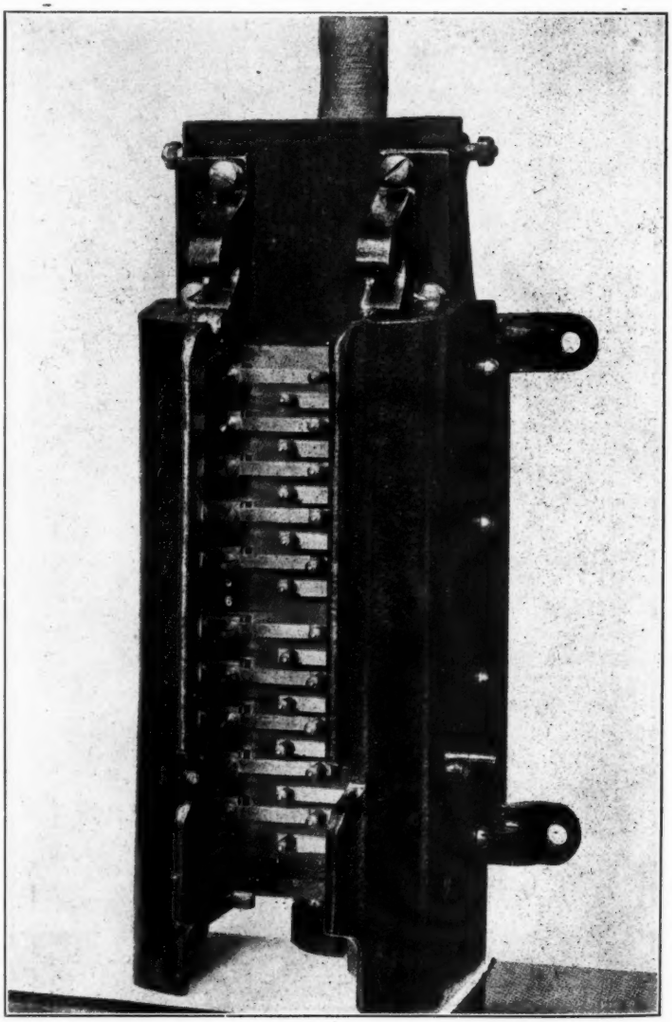


Figure 7—Cable box with cover removed, showing platinum-tipped springs.

tion line from a magneto exchange, a special service which will supply current for speaking must be provided.

The cord circuit (Figure 6) is the ordinary central battery private branch exchange circuit.

Ten pairs of wires for exchange junction lines are carried in lead-covered cable from the distributing frame to each side of the ship where they are terminated in a box of special design.

The box is made of gun metal and is fitted with ten pairs of platinum-tipped bronze springs carried on an ebonite slab. The ten pair cable is taken through a nozzle in the end of the box and the conductors are connected on to their respective terminals. A wiped joint is made between the cable sheath and the nozzle, the interior of the box is filled with hot compound and the back cover screwed on.

On the preceding page will be found an illustration (Figure 7) of the box with the cover entirely removed, showing the platinum-tipped springs.

On the landing stage or dock, where the ship is berthed, are fitted a series of similar boxes, each having ten junction lines from the local exchange terminating on them. These boxes are so placed that in whatever position the ship is berthed one of them will be within easy reach of the box on the ship. A length of special flexible cable containing ten pairs of wires, and fitted at each end with a cable head, is provided for effecting connection between the ship's box and the shore box. Each cable head on this linking-up cable consists of a gun metal casting fitted with ten pairs of platinum-tipped studs carried on an ebonite slab. The cable is taken through a brass nozzle and the conductors connected to terminals (solid with the studs referred to) inside the cable head, the remaining space is filled with hot compound and the metal cover screwed on. Figure 8 is a view of one of the linking-up cable heads with the flexible cable connected.

When the cable head is placed in position on the fixed terminal box and pressed home, a spring catch is automatically brought into operation and holds the cable head

FIG. 4 EXTENSION LINE

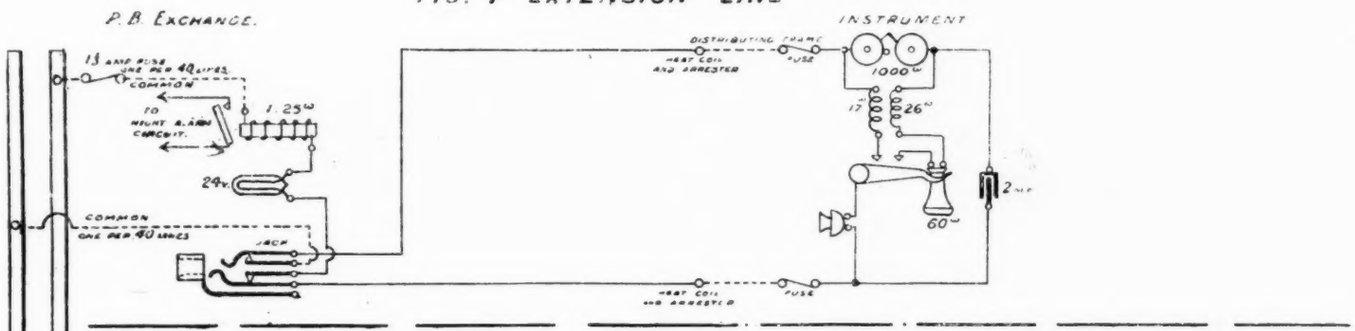


FIG. 5 EXCHANGE LINE TO CENTRAL BATTERY EXCHANGE

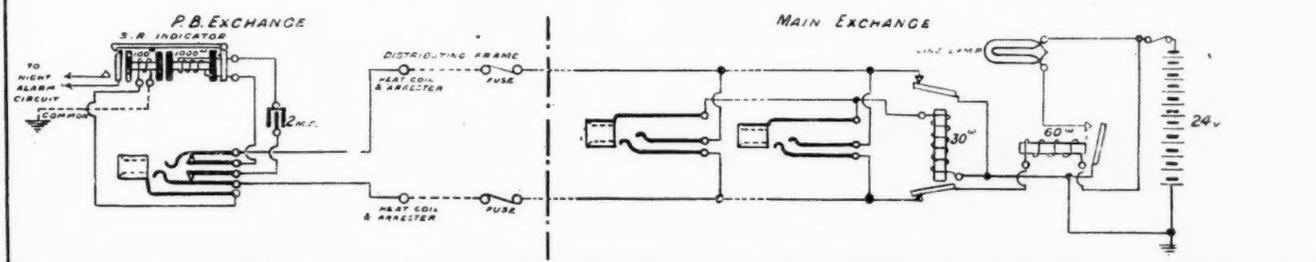
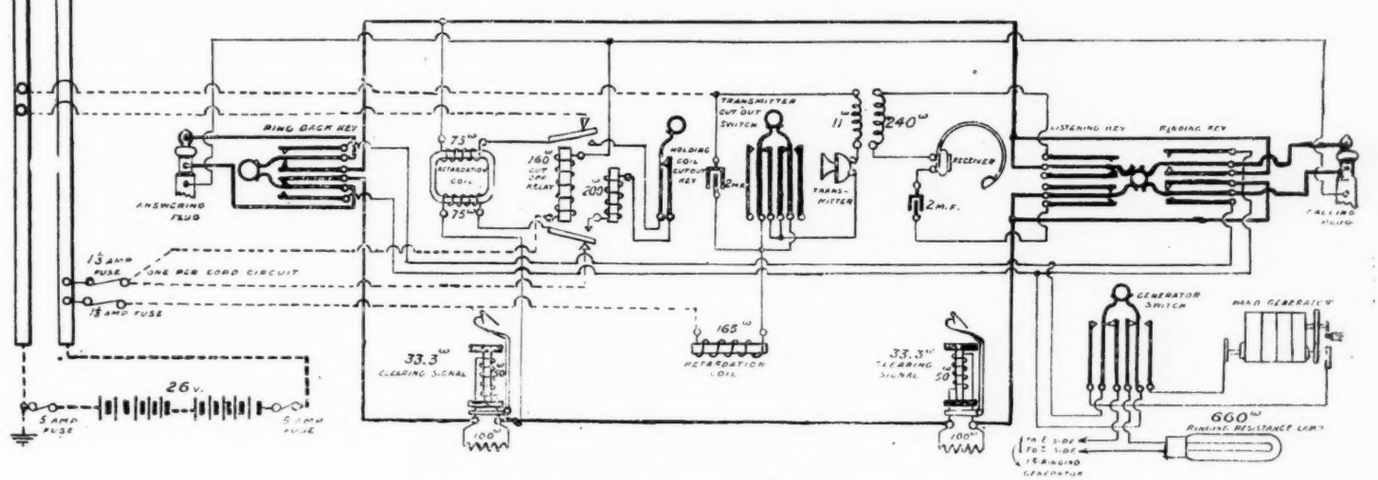


FIG. 6 CORD CIRCUIT AND OPERATORS CIRCUIT



Figures 4, 5 and 6—Circuit diagrams showing extension line, the exchange line to central battery exchange and the cord circuit and operator's circuit.

firmly so that the studs of the movable cable head make good contact with the springs of the fixed terminal box, thus connecting the exchange junctions through to the ship switchboard.

To release the cable head from the terminal box, a thumb piece on the under side of the latter is depressed, allowing the cable head to fall into a position in which electrical connection is severed and from which it can be lifted clear of the box. Figure 9 shows the ship's box with cable head in position.

At the Liverpool landing stage three shore boxes are provided. Each box is fitted in a special pit, sunk near the edge of the stage, the ten pairs of exchange lines being

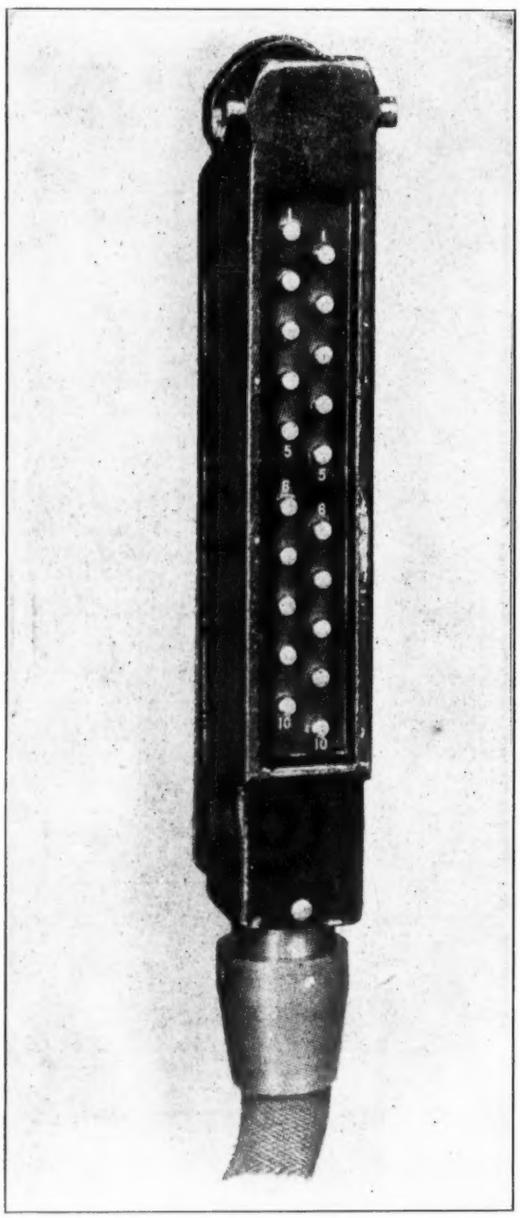


Figure 8—Cable head with flexible cable attached.

run to each of the pits underneath the flooring of the landing stage.

Following the example of railway companies which equip their "de luxe" trains with telephone service, it is considered only a question of time when all the great ocean liners will possess telephone systems more or less complete.

The great size of the steamers necessitates the adoption of some means by which the navigators on the bridge can communicate their orders without delay, and it is considered equally desirable that passengers should be able to speak with purser or stewards without incurring the fa-

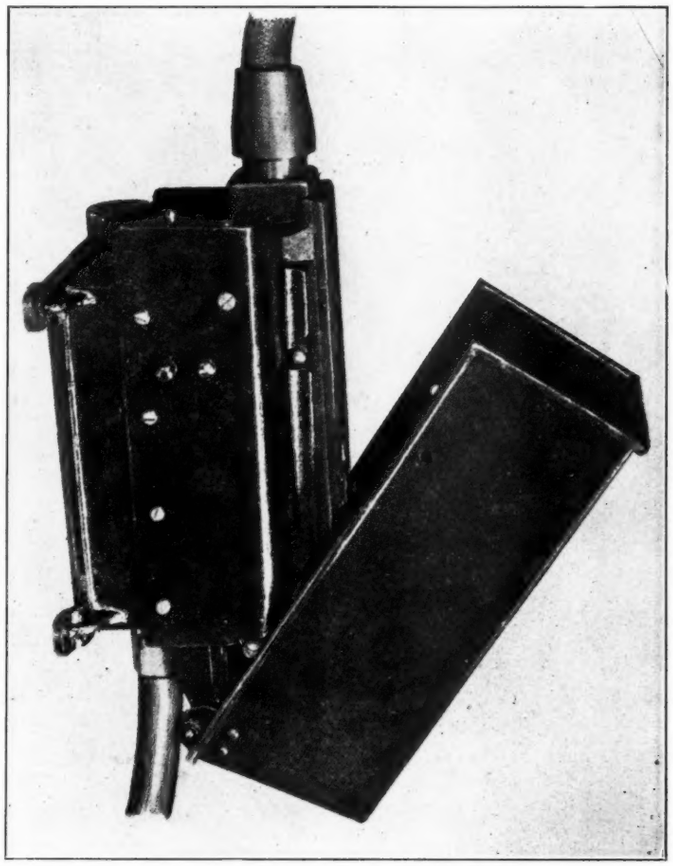


Figure 9—Ship's box with cable head in position.

tigue and delay of a journey which, in a ship of vast dimensions, might be very considerable. The system adopted to secure this communication, of course, is that of the telephone. Steamers on the great lakes and doing a coastwise business in time will also be equipped with telephone plants.

IMPROVEMENTS AT OMAHA.

The Independent Telephone Company at Omaha is now placing its switchboards in the new exchange buildings on Harney and Twenty-fourth streets.

"Inside of sixty days we will have telephones in operation," says Vice President F. H. Stow. "We have had but two solicitors in the field, yet we already have contracts for 4,100 subscribers, and for fifty-five private exchanges. We have finished wiring a dozen of the biggest office buildings, and they are ready to attach the telephones as soon as the switchboards are installed. We have also done the wiring for over 1,200 telephones outside of those office buildings.

"We will connect up the downtown telephones at the start, and extend out into the residence district as the cables are strung and the private wiring put in place. The switchboard people did not believe that it was possible to make the progress that we have made, and they sent out an expert to see how soon we would be ready. He came along and then wired his company that all the material must be rushed along at once, as we would be waiting for it. It is a fact that there has never been a plant of this size built in the time that we are building this one, and it is a big surprise even to the people who are in the business."

AUTOMATIC SERVICE RECORDS

Some Possibilities in the Direction of Labor-Saving Devices for Checking Telephone Traffic

By T. V. Davis

AMONG the labor saving devices for checking telephone traffic may be mentioned an arrangement which is a modification of the chronograph. This arrangement can be made automatically to record a surprisingly large amount of information relative to the events taking place upon a telephone line. The writer has given some attention to the development of this device and found that with a really simple arrangement perfectly legible and

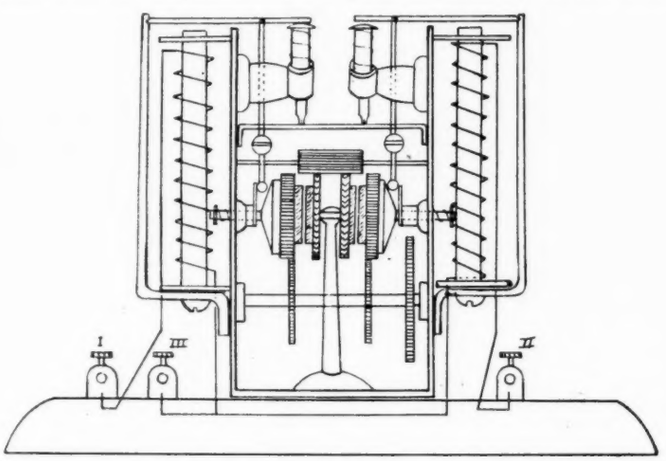


Figure 1—Automatic service recorder.

permanent records can be produced, which will record the following information:

1. The total amount of time elapsing in fractional seconds between the time a subscriber removes his receiver from the hook switch and the time the operator responds to the call by placing a connecting plug into the subscriber's line jack.
2. The time elapsing in fractional seconds from the moment that a receiver is placed upon the hook switch until the operator withdraws the connecting plug.
3. The total length of time in minutes and fractions thereof that a subscriber has possession of a line.
4. The period of time elapsing from the moment an operator plugs into a line for signalling the subscriber until the latter obtains a response from the subscriber's station.
5. The total amount of time a line has been in use for a given period of hours or days.
6. The total number of times a line has been used in a given period.
7. The total number of in-coming calls.
8. The total number of out-going calls.
9. The exact sequence of all calls to and from a given station.
10. A complete record indicating when a subscriber flashes a line signal or supervisory signal.

The method of producing these records consists in recording a black and a red ink line upon the opposite margins of a moving strip of paper tape having transversely ruled lines, divided into periods of seconds or minutes, as will be described later. The length of these lines and the number of them in a series together with their relative positions will give all the information outlined above.

As shown by Figure 1, a tape drum is suitably mounted adjacent to a case containing two electro-magnets and associated with this we have the motor-mechanism whose function it is to draw the tape at a predetermined rate of speed, the control of this mechanism resting with the two magnets connected with certain limbs of the line circuit, as shown in Figure 2. This circuit arrangement, as a rule, should terminate in a plug at, say, for example, the hospital position of a switchboard or at any other place where access to the multiple may be had without interfering with the regular service. The magnets which control the pens or markers of the recording device also co-operate to produce a change in the speed of travel of the tape through changing the relations of the gear wheels, operating as follows: The action of either magnet singly produces a speed of one interval or division on the tape per second. When both magnets act together, the speed of the tape is reduced so as to travel one division per minute. The device is further constructed so that upon the magnet releasing a check device upon the clutch, it allows the tape to continue its travel for a fraction of a second after the pen has left it, thereby producing a small unmarked interval between the successive lines.

Whenever magnet No. 1 is energized, which takes place when the line circuit is closed, the black line is produced upon the tape. The energization of magnet No. 2, however, produces a red line on the tape so long as a plug is in the jack. The operation of the device when connected to a line for observation purposes is as follows: A subscriber removing his receiver from the hook switch causes magnet No. 1 to be energized, which brings the clutch into operation and also results in the pen carrying the black ink, making a record upon the tape as it is drawn forward by

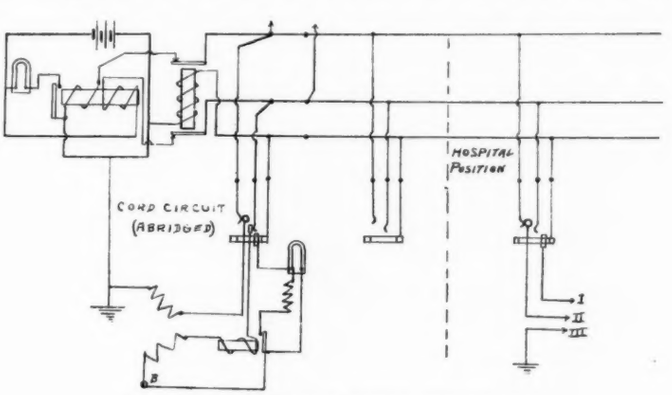


Figure 2—Switchboard circuit connections.

the motor mechanism. This black line is recorded at the rate of one interval per second and continues until the operator responds, which act brings into service magnet No. 2. This causes the pen with the red ink to come into contact with the tape and also results in a change in the speed of travel of the tape from one interval per second to one interval per minute. This rate of speed will continue and both black and red lines will be recorded so long as a line circuit is closed and a connecting plug has been placed into the spring jack. With this condition present, magnet No. 1 is de-energized whenever a subscriber replaces his receiver to the hook switch, and, as was explained before, the black line producing pen is lifted away from the tape and the red line continues to record at the rate of one

interval per second until the operator takes down the connection.

Figure 3 shows the appearance of a record produced when a subscriber removes his receiver from the hook switch and the operator responds, and also when the subscriber replaces the receiver to the switch and thus opens the line. Referring to Figure 3, the bracketed portion indicated by I, shows the black line recorded and indicates that about four and one-half seconds of time elapsed before the operator placed a connecting plug into the line jack. The bracketed portion, III, shows the length of time the subscriber was upon the line, i. e., six minutes. The portion

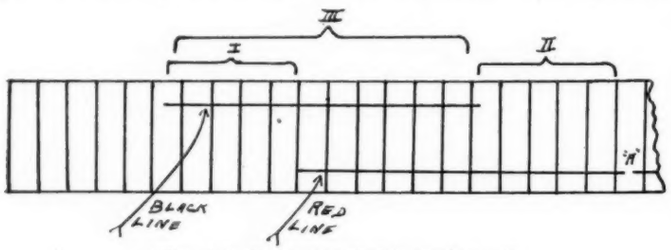


Figure 3—Tape record of incoming call.

shown by II indicates that it took the operator about five seconds to pull down the connection. A further fact shown by the record is that owing to the black line preceding the red line, it serves as information that the call originated with that particular subscriber's line.

The interval *"A"* shown between the end of the record just considered and beginning of the next record, is produced by a check on the releasing mechanism of the clutch, as explained above.

Figure 3-A, owing to the presence of the red line ahead of the black line, indicates that the call originated upon some other line, and from it we may learn that it took the called party fifteen seconds to answer the call.

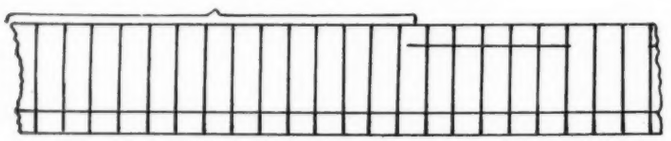


Figure 3A—Tape record of outgoing call.

It will further be observed that the length of the conversation in minutes is distinctly indicated by the short black line at the upper portion of the record.

Figure 3-B, it will be observed, shows a record in which a subscriber did not receive immediate attention from the operator, and was required to work his hook switch immediately before the operator responded and that he was also required to flash his supervisory after completing his conversation.

The length of tape used upon a given line for a period of twenty-four hours may be from fifteen to twenty-four yards,

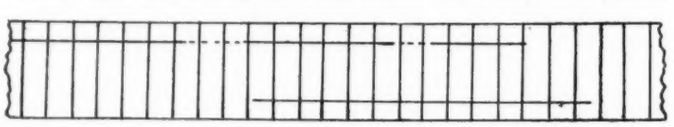


Figure 3B—Record showing flashing of signals.

particularly if the line is in constant use during that period. The record upon such a tape covering a period of twenty-four hours of service may be noted, read, and transcribed in about fifteen minutes' time. It is, of course, needless to say that in order to get the same information by the usual observing method would take twenty-four hours of constant attendance on the part of the observer. After a record has been inspected, it may be re-wound upon a small card-board reel and all information relative to the record may be written upon the side for future reference.

The foregoing system shows the application of the automatic service recorder to a line circuit of standard type and the circuit arrangements can, of course, be made to meet any existing line circuit, even extending to the difficult problem of recording the service of a private branch exchange trunk, which during idle periods may be used for charging the private branch batteries.

The value of some of the information which may be secured through the installation of a device described above may be questioned somewhat by certain managers of telephone exchanges. However, it is within the writer's knowledge that such questions as the amount of time a line has actually been in use and length of individual calls frequently arises and the amount of time plus the number of times a line has been used form valuable information for determining the probable need of more circuit facilities. It is not supposed that this scheme can take the place of all manual observation in connection with service and traffic investigations, but as an adjunct to the usual equipment it would relieve observing operators of the labor involved in checking time intervals with stop watches, thereby leaving the check operator free to record other errors or defects in the service.

HOUSTON'S FIRST TELEPHONE.

A. C. Gray, of Houston, Tex., has been recalling some telephone reminiscences in connection with the franchise fight in that city. He writes:

"The question as to whether the Southwestern Telegraph and Telephone Company had ever been granted a franchise by the city of Houston, caused my mind to revert back some twenty-eight years ago and recall the circumstances of the introduction of the telephone to the people of Houston. It is possible it may have been in 1878, but I believe it was in 1879, when the first telephone instrument was put in use in this city. To Dr. David F. Stuart, whose office was then in the Larendon building on Congress avenue, in front of the court house, is due the credit of putting up the first one. It was used for a time more for amusement than for business, but it was not long before the people 'caught on' and the telephone became popular.

"The first exchange was located in the Fox building, corner of Main street and Preston avenue. The wire was temporarily strung on telegraph poles by consent of the then manager of the telegraph office; and so far as I ever heard his was the only consent asked or given for the erection of the line. The wires were extended so rapidly that it was a comparatively short time before the company began the erection of its own poles, and a more commodious 'exchange' became a necessity. Hence the application for the use of the market house tower; and I am quite sure that was the first and only application ever made the city council by the Southwestern Telegraph and Telephone Company for a grant of any kind, and the first and only grant of any sort the city ever made until the passage of the ordinance relative to putting the wires into underground conduits.

"The entrance into Houston of the telephone company was the introduction of a much needed public utility, and the people welcomed it and made use of it without let or hindrance. In those days the people did pretty much as they wanted to do, and required much less law than seems necessary now. There was more individuality and less monopoly then, and maybe that makes the difference."

"The Canadian Independent Telephone Association no doubt serves a useful purpose," says the Toronto Star, "but if any corporation can be more *independent* than the one that has the franchise now, the public would like to hear of it."

Needless to state, the company for whom this sly thrust is intended is the Canadian Bell.

IMPROVEMENTS IN CANADA

The Telephone Industry Growing Apace in Every Province of the Dominion

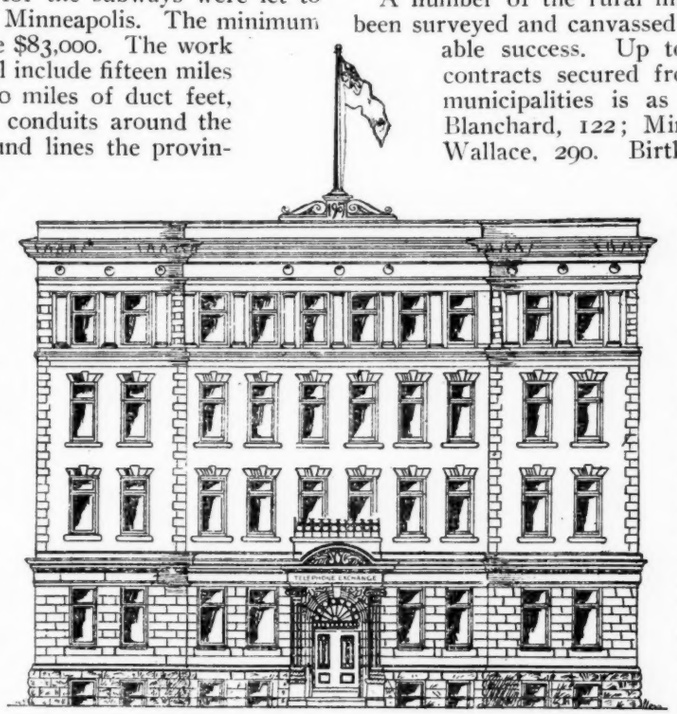
By M. D. Buffington

AS DEMONSTRATED at the Toronto convention, a report of which appears on another page, Canada is experiencing a telephone boom. In every part of the dominion, the industry is growing rapidly and the prospect is that the coming twelve months will see extensive improvements made by the Independents in every province.

The Manitoba cabinet has let contracts for the provincial telephone subways in Winnipeg and for the building of the telephone exchange and work will be rushed with all possible speed. The contracts for the subways were let to Stone & Green, contractors, of Minneapolis. The minimum cost of this undertaking will be $83,000. The work will be done this fall. This will include fifteen miles of trench work, and about 100 miles of duct feet, forming a perfect network of conduits around the city. Besides these underground lines the provincial telephone department will erect pole lines in different parts of the city.

The contract for the new telephone exchange building, on Charlotte street and McDermott avenue, was let to a Winnipeg firm, James M. & John J. Kelly. The contract for the building will be $97,172, exclusive of heating and plumbing. Work is to be commenced at once. and the building to be completed by October 1st, 1908.

The new building, shown in the accompanying illustration, will be four stories high, fireproof and constructed of steel, stone and brick. It will have a frontage of eighty-two feet on McDermott avenue and ninety-six feet on Charlotte street. The building will be devoted entirely to the telephone system and will include a modern central station for both local and long distance lines, as well as the offices of those in charge of this department of the government.



Central office building, Manitoba public telephone system, Winnipeg.

In the province of Alberta, work on the government telephone lines is progressing satisfactorily, and by the end of the present year nearly 500 miles of the long distance government telephone lines will have been constructed according to the original plans of the minister of public works. Up to date about half of the work has been completed. In addition to the trunk lines, from twelve to fifteen exchanges will have been installed along the different trunk routes Construction work on the Lacombe-Stettler line is nearly finished, although it will not be in operation until the equipment for the exchanges has arrived and been installed. The line from Stettler to Daysland will be the next to be finished after which gangs of workmen will be transferred to the Edmonton-Lloydminster line.

Eighty miles of work on the line from Macleod to Blairmore is progressing fast and will be finished early in the fall. The exchange at Blairmore is now in operation, having been taken over from a private company and standardized. The rural line from Vegreville north is also to be constructed this fall, which will be of the greatest convenience to the farmers of the Vermilion valley. Work is in progress at Fort Saskatchewan standardizing the equipment and putting in metallic circuits. When the present season's program is completed the public works department of Alberta will have built in the neighborhood of 150 miles more long distance telephone lines than has been erected in the province by the Bell telephone company in the past ten years.

A number of the rural municipalities in Manitoba have been surveyed and canvassed for subscribers with considerable success. Up to last reports the number of contracts secured from subscribers in the various municipalities is as follows: Woodsworth, 220; Blanchard, 122; Miniota, 223; Brenda, 244, and Wallace, 290. Birtletown and the municipalities of Birtle, Whitehead, Hamiota and South Norfolk have also been surveyed and are now being canvassed. Minnedosa and Saskatchewan are submitting telephone by-laws over again. In the municipalities adjoining Winnipeg the work of surveying and canvassing has not yet been taken up, as telephone lines in those localities would be of little use without the central exchange in the city. This work will be taken up next spring to be ready for the completion of the exchange. The government has a surveyor in the field continually at work in the various municities to the west. Construction work in the municipalities where there have been surveys and canvasses made will be started soon, as their completion will not depend upon the completion of the city exchanges.

Hon. R. L. Borden, leader of the opposition in the Canadian parliament, has formulated a platform, containing a plank declaring for government ownership of telephone lines. His policy is expressed as follows:

"It has been demonstrated in Great Britain that telegraphs and telephones can be successfully operated in connection with the postoffice department. I see no reason why a similar system should not be inaugurated and carried out successfully in Canada. Few people realize that at the present time Canada owns and operates 6,586 miles of telegraph line. If we are prepared to invest national capital in thinly-peopled and unremunerative localities, why should we hesitate in those portions of the country where operations can be carried on at a profit? I do not forget the necessity that our great railways must be equipped with telegraph and telephone lines, nor do I forget the principle of justice to invested capital which I have already invoked. Having regard to these considerations our policy includes: The establishment after due investigation of a system of national telegraphs and telephones under conditions which shall be just to capital already invested in those enterprises."

THE CHICAGO SITUATION

What the Bell Company's Revised Ordinance Provides and How the Telephone Public Regards It

By F. P. Tiffany

THE purpose of the Chicago Telephone (Bell) Company to rush through the ordinance granting that monopoly a 22-year extension of franchise before the city charter election was abandoned September 12, when its sponsor on the floor of the council asked for a postponement. So much opposition had developed to the Bell franchise that its advocates decided discretion was the better part of valor. Had a vote been forced at that time it is believed the ordinance would have failed, as the sentiment of the public was plainly against hasty action. The defeat of the charter September 17 gave the Bell people new hope, but the opposition continues with little abatement.

As it came before the council in its amended form, the Bell telephone ordinance, briefly stated, covers the following points:

The Chicago Telephone Company is given the right to operate in the city of Chicago until January 8, 1929.

The company is to pay as compensation to the city three per cent of its gross receipts on all local business, and its books are to be open to the officials of the city for verification of the accounts.

Right is given the city to use the company's poles for its police and fire wires, and the company is to furnish free transmitters and receivers for such service. The company is to furnish whatever free telephones are necessary for the city hall and ten for the board of education.

For business users the present $125 flat rate is retained, with a new measured service optional to those who prefer it to the flat rate. In the measured service maximum rates are fixed as follows:

Single party line with 300 outgoing calls during three months, $15 a quarter.

For the next 600 outgoing calls, 3 cents each.

For all outgoing calls in excess of 900 a quarter, 2 cents each.

A subscriber contracting for 1,800 outgoing calls a quarter shall be given a second single party line free, and an additional one for each additional 1,500.

Additional lines shall be furnished subscribers not contracting for any fixed number of outgoing calls at the rate of $6 a quarter each, the messages to be paid for at the regular rate.

A single outgoing party line with unlimited service shall be furnished at the rate of $1 a day. Such a subscriber shall have an additional single party line for each 1,500 calls he will contract to pay for at the rate of 2 cents a call.

Subscribers to more than one single party line shall be furnished with free private switchboard and appliances.

Residence rates for a single party line shall be $18 a quarter.

Residence rates for a two party line shall be $14 a quarter.

Nickel prepayment telephones shall be furnished on a one party line on a guarantee of 20 cents a day.

On a two party line at a guarantee of 15 cents a day.

On a two party line (private residences only) on a guarantee of 10 cents a day.

On a four party line (private residences only) on a guarantee of 5 cents a day. Code ringing shall be permitted on these last lines.

For all public telephones in the city the charge shall be 5 cents a message.

Neighborhood exchanges may be established, the rates inside which shall be:

	Business.	Residence.
One party line	$4 a month	$3 a month
Two party line	$3 a month	$2 a month
Four party line	$2 a month	$1.50 a month

Subscribers to these exchanges may connect with all outside telephones at a charge of 5 cents a message.

Toll service for a distance of fifteen miles outside the city shall not be more than 10 cents a message.

Extension telephones shall be furnished at the rate of 50 cents a month, except none shall go with four party lines.

The council can change the rates two years and a half from the time the ordinance goes into effect and every five years afterwards, all new schedules, however, to continue in force five years.

The company is to pay the city all net earnings in excess of 10 per cent on its average investment for the year, but in determining the net earnings not only must the 3 per cent on the gross to be paid the city be deducted, but all taxes, special assessments and other governmental requirements, general and legal expenses, maintenance and repairs, and a reserve fund of not more than 8 per cent of the average investment. What balance remains shall be called net earnings.

The average investment for the year is to be computed as including not only the company's tangible property but its working capital as well. The reserve fund shall be used only for improvements on the property. The values shall be fixed by a board of three appraisers, one named by the city, one by the company, and the third by these two.

The company is forbidden to enter into any sort of combination with any other telephone company.

Wires shall go underground in the territory bounded by the lake, Howard avenue, East Ravenswood Park avenue, Irving Park boulevard, Western avenue, Diversey avenue, Kedzie avenue, Chicago avenue, Fortieth avenue, Twenty-sixth street, Center avenue, Seventy-ninth street, Vincennes road, Seventy-third street, Cottage Grove avenue, Baltimore and Ohio tracks, and Eighty-ninth street.

Outside of this district bounded by the lake, the river, and Twelfth street, wires can be brought out of conduits and carried overhead for a distance of two blocks.

On thirty days' notice the city has the right to purchase the plant January 1, 1919, or January 1, 1924, and on the last named date, if it does not care to purchase itself can designate a licensee company which can purchase on the same terms as itself.

The Chicago newspapers contend that the Bell is asking too much and offering too little. The three per cent compensation clause, especially, is attacked as being too small a return for the benefits the Bell monopoly seeks under the ordinance. For "patent rights" the Chicago licensee is obliged to pay the American Telephone and Telegraph Company, the parent concern, 4½ per cent of its gross receipts, which, it is estimated, would amount to $350,000 a year. It is also estimated that the city, under the 3 per cent compensation clause of the ordinance, would receive about $240,000, and the people of Chicago, who pay the local Bell company in the neighborhood of $1,600,000 profits a year, think there is too much disparity between the two amounts. As in many other cities of the country, what "roils" the telephone users of Chicago is the idea that so much of their money goes elsewhere to stockholders in the parent Bell concern. With reference to this feature of the Chicago situation, the following table shows how the local Bell licensee and the parent company have prospered in Chicago since 1892, stock issues, etc.:

Date of issue	Stock issued	Issue price	Market price, date of issue	American Bell Co's proportion of new stock	American Bell Co's profit on new stock rights	Individual stockholders' proportion	Individual stockholders' profit on rights
January, 1892	$2,000,000	outs'g		$1,020,000		$ 980,000	
February, 1892	260,000	100	225	132,600	$ 122,400	127,400	$ 117,600
August, 1892	519,800	100	208	265,100	161,364	254,700	155,036
December, 1892	500,200	100	214	255,100	127,593	245,100	122,589
December, 1893	516,200	100	200	263,262	200,736	252,938	192,864
February, 1896	531,400	100	158	271,014	154,880	260,386	148,808
May, 1899	672,400	100	215	342,924	264,840	329,476	254,448
April, 1900	1,000,000	*		510,000		490,000	
April, 1900	500,000	100	175	255,000	1,275,000	245,000	1,225,000
October, 1900	500,000	100		255,000		245,000	
April, 1901	1,000,000	100	260	510,000	642,600	490,000	617,400
October, 1901	1,000,000	100	255	510,000	693,600	490,000	666,400
February, 1902	1,000,000	100		510,000		490,000	
July, 1902	1,000,000	100	220	510,000	1,606,500	490,000	1,543,500
October, 1902	1,000,000	100		510,000		490,000	
June, 1903	1,000,000	100	140	510,000	183,600	490,000	176,400
October, 1903	1,000,000	100	122	510,000	66,300	490,000	63,700
Totals	$14,000,000			$7,140,000	$5,499,413	$6,860,000	$5,283,745

*Stock dividend.

The executive committee of the International Independ-

ent Telephone Association held a meeting in Chicago, September 20, and adopted the following resolution on the local situation and describing the position of the organization in relation thereto:

"Whereas, The city council of the city of Chicago is considering the advisability of compelling the Chicago Telephone Company to connect with the lines of Independent telephone companies; and

"Whereas, We believe it to be for the best interest of the citizens, mercantile and manufacturing interests of Chicago that the city should have an up-to-date local and long-distance Independent telephone company; therefore, be it

"Resolved, That we, the executive committee of the International Independent Telephone Association are unalterably opposed to any Independent connection with the Bell Telephone Company in the city of Chicago or elsewhere, as well as being opposed to any terminal for the Independent telephone companies to be used in connection with the Bell system."

The resolution was introduced by James B. Hoge, seconded by George N. Bandy, and was unanimously adopted.

As to Chicago getting connection with Independent telephones, the Chicago Association of Commerce in its Weekly Bulletin for September 6, said:

"Public opinion seems about to crystallize in an ordinance granting a new franchise to the Chicago Telephone Company. In the closing agitation over this problem there are suggestions that the Chicago Telephone Company should grant connection with Chicago to the great outlying system of Independent telephone companies seeking admission to this city. Upon the other hand it appears that the Independents not only do not ask affiliation, but have denounced such policy. Last June at the meeting of the International Independent Telephone Association in this city, it was unanimously 'resolved that this association frowns upon and denounces any affiliation or connection of Independent companies with the Bell company anywhere on the American continent as being injurious to the people as a whole.' Be this as it may, it is interesting to know what the Bell people say to such a proposition, and what are the contentions of the Independents as to an Independent connection with Chicago. The Bulletin has invited expressions from both interests.

"The case for the Independents is presented by H. B. McMeal, editor of TELEPHONY, a monthly telephone journal published in this city. Mr. McMeal says:

" 'Chicago's greatness has been justly attributed to its success from a commercial standpoint, and upon this fact alone I base my assertion that the city should give a franchise, and a good one, to a strictly Independent telephone company. By strictly Independent, I mean a company which will compete with the present Bell monopoly vigorously in every respect, and which will not be handicapped by any entangling alliances with that concern or any of its kindred companies. Chicago, under present conditions, is undoubtedly being deprived of a great volume of business which is flowing into other cities, having Independent telephone systems and connections.

" 'There are within 500 miles of Chicago almost a million and a half Independent telephone subscribers. In this same territory there are approximately 10,000 business concerns, using Independent telephones, which would be glad to trade with Chicago merchants if they enjoyed Independent connections. Other cities have profited by this fact to Chicago's disadvantage. St. Louis, Indianapolis, Cleveland, Toledo, Minneapolis and St. Paul have strong Independent systems, with tributary lines, covering the contiguous territory. A new Independent system is now being built in Detroit, and a franchise has been granted in Milwaukee, where work will begin soon. Each and every one of these Independent plants in such important commercial centers will continue to take more and more business away from Chicago, so long as the Chicago Telephone Company is allowed to continue in its present monopoly.

" 'No one concern can or should control the telephone business of this country any more than one gigantic trust can or should control all of the street railway systems, electric plants, or railroads of the United States. It is in utter contradiction of all the rules of public policy. To illustrate what I mean by this I need only cite the fact that during the eighteen years when the Bell Telephone Company had a monopoly of the telephone business in the United States, it only succeeded in installing 325,000 telephones, and these were operated very unsatisfactorily and under physical and financial conditions which continually harassed the public. Within the twelve years which have elapsed since Independent telephony obtained its first foothold, the telephone industry has developed to a point where there are now upward of 7,000,000 telephones in operation in the United States. Of this number over 4,000,000 are Independent and represent a total investment of over $400,000,000. Meanwhile, the Bell also has been compelled to improve its apparatus and service to keep pace with its Independent competitors, and the public has thus been doubly benefited by reason of the Independent competition.

" 'The chief objection most commonly urged against a second telephone system in the same community (aside from those objections lodged by interested parties) comes from a few merchants who either do not know the facts or who are too indifferent to their own interests to care for the additional trade which the competing company will bring. They seem to fear that it will be an annoyance and useless expense to have two telephone systems in their establishments. The truth is, a canvass of the telephone directories in eight of the largest cities of the United States, where more than one company operates, shows that while practically twice as many people now use telephones as did when but one company existed, yet there is a duplication of but 12 per cent in the lists of telephone users. In other words, only 12 per cent of the total telephone subscribers use both systems. From a purely practical standpoint, therefore, is it not for the city's best interests that this 88 per cent, net, of new telephone subscribers be added to Chicago's up-to-date commercial facilities, the facilities afforded right here at home, within our city limits? When you take this fact into consideration, along with the volume of outside trade, which is bound to flow into Chicago through the medium of a competitive system, I think you have the strongest possible argument why Chicago's business interests demand the admission of an Independent company.

" 'The number of Independent telephones in the country contributory to Chicago is today fully double the number operated by the Bell companies, of which the Chicago Telephone Company is the local representative. I fear that the majority of Chicago citizens and particularly her business men, are not sufficiently familiar with telephone conditions to distinguish the vital differences existing between the Bell and the Independents, nor to appreciate the importance of the latter from a commercial standpoint. If, however, they will briefly consider that there are not less than 9,000 Independent companies now operating in something like 13,000 towns and cities of the United States; that these Independent companies outnumber in their grand total of subscribers the Bell companies by a ratio of over four to three; and that in the territory tributary to Chicago the Independents outnumber the Bell by two to one, I think that the situation from a local, commercial standpoint may appeal to them in a clearer, possibly altogether different light.

" 'Chicago still retains some nine or ten Independent telephone factories, although a half dozen or more have been driven from the community because of their inability to secure Independent connections here, and because of the indifference manifested by the city towards an industry

which takes high rank among the great commercial interests of the country. Certainly, the city owes these people some kind of recognition, some degree of consideration.

"'Speaking from another standpoint, we do not see how the granting of a franchise to an Independent company can possibly harm the city. On the contrary, the establishment of an Independent company here will mean the expenditure of something like $15,000,000, most of which undoubtedly will go to Chicago's manufacturing and jobbing concerns and toward the employment of Chicago's labor. Show me what you have to offset this kind of proposition.

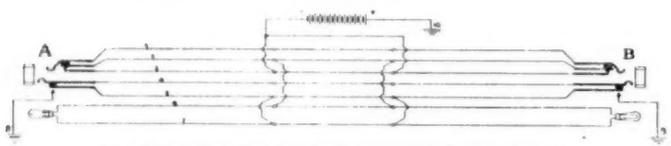
"'As a purely business matter, and that Chicago claims to consider foremost always, I claim that an Independent telephone system for Chicago will be one of the most important steps which the city can possibly take toward realizing our plan for a greater and better Chicago.'"

QUESTIONS AND ANSWERS

By H. P. Clausen

HAVING installed my third position of switch-boards, it becomes necessary to provide some means of trunking connections between the first and third positions, as the cords are not long enough to reach across the middle position. If you can give me information as to a suitable circuit, I would like to have it so arranged that I can use a lamp signal on each end of the trunk line.—A. B. S., Kansas.

From the nature of the inquiry it appears a two-way trunk circuit is wanted. Referring to the diagram below, *A* represents one end of the trunking circuit and *B* the other, terminating, as it will be observed, in six point spring jacks. These jacks, of course, must be of suitable construction, so that they will fit the plugs now in the switch board. The battery must, of course, be of suitable capacity for supplying the lamps with the required amount of current. It is suggested that an eight or ten-volt lamp be used, as it is difficult to avoid accidental burn-outs through the possible addition of a single cell of battery should a lower voltage lamp be used. It is recommended, therefore, that there be used, say, a ten-volt lamp and battery. As the exchange is still small, it may be advisable to use dry batteries and by connecting two sets of dry batteries in multiple, very satisfactory results may be obtained. The operation of this circuit is as follows:



A two-way trunking circuit, using lamp signals.

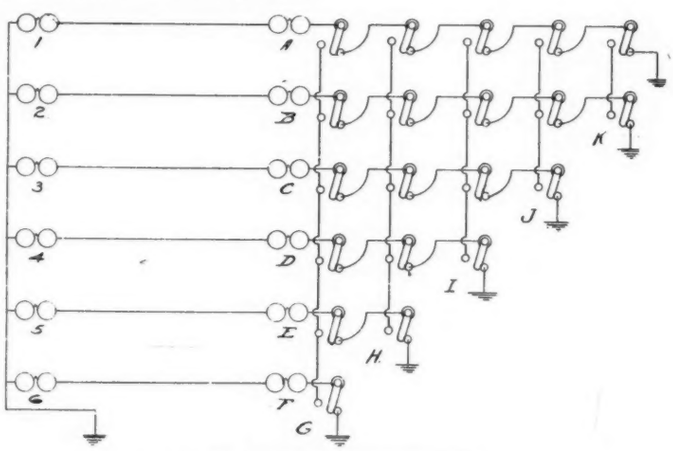
Upon the *A* operator receiving a call for a connection which requires to be extended to the *B* operator, a plug is placed into the *A* spring jack. This results in opening the contacts 2 and 3 at the *A* jack and closing the contacts 5 and 8. The closing of the contacts 5 and 8 results in placing the ground battery upon the wire 7 of the lamp circuit, and owing to the contact 2 and 3 at spring jack *B* still resting together, negative battery is placed upon the 6 wire of the lamp circuit. This results in lighting the lamps, and thus produces a signal which serves as information to the *B* operator that a connection requires attention. The service may be handled from this point on by the *B* operator requesting the subscriber to repeat the number of line wanted; or, as is generally done, the *A* operator may press an order button and speak to the *B* operator, advising her what line should be connected together with the spring jack associated with the lighted lamp. It will be observed that when the *B* operator places a plug into the spring jack, it opens the contact between the springs 2 and 3. This extinguishes the lamp. Now, it will be observed, should either of the operators withdraw the connecting plug, it will result in re-closing the contact between wires 2 and 3 and re-lighting the lamp, which then serves as a disconnecting signal, the lamps being extinguished when the remaining switching plug is withdrawn from the jack.

In a specification of a telephone plant which I have before me the following passage occurs: "The connections shall be such as to reduce side tone as far as compatible with efficiency." Will you kindly let me know through the medium of your journal, to which I subscribe, what is meant by the term *side tone*. I will look for a reply in your "Answers to Questions" columns.—F. A., Berlin, Germany.

The correspondent evidently has reference to the side tones as heard in a subscriber's telephone receiver. The expression "side tone" is a difficult one to absolutely define, and we are glad that the correspondent has brought this question up for discussion.

Whenever two complete telephone equipments are connected together for conversational purposes, then while subscriber A speaks into the transmitter of his equipment, subscriber B may hear the spoken words while having the telephone receiver at his station placed to the ear. The noise which subscriber A hears in his own receiver is what ordinarily may be termed side tones, and to whatever extent such locally heard side tones may be reduced while speaking into the transmitter, belonging to the same equipment, that reduction in the intensity of the sound heard may be defined as reducing the effects of side tones. In other words, the lower the sound one hears in his receiver, while speaking into the transmitter, the more desirable is such an equipment from a "side-toneless" standpoint.

I have in service six telephone lines and am using a spring jack and bell for each line at the central office point. For connecting together the lines I use cords and plugs. Is there any other way by which these six lines may be connected together and at the same time permit of securing a satisfactory service for local lines? The telephones and ringers which we are using are of the low-wound type. Is there not some plan of switches which can be adopted so that I can connect together any of the six lines and do away with the necessity of using plugs and cords, as they are giving me some trouble?—R. S. T., Iowa.



A simple switching arrangement.

Many arrangements have been produced which permit connecting together a number of line circuits terminating

at a central point without calling for the use of cords, plugs and spring jacks.

The diagram above shows such a plan, which may be made up from single lever double point switches. It will be observed that telephone No. 1 connects with bell *A* and that the remaining side of the bell connects to the switch lever, which normally rests upon the right-hand contact point. It will further be observed that the contact point is connected to the lever of another switch. In fact, it is connected through to a series of switches and at the last switch the contact point is connected to earth. The same arrangement of switch and line connection is shown in combination of line No. 2, 3, 4, 5 and 6. With this arrangement of switches, we will say, you desire to connect lines No. *A* and *C*. In order to do this it is only necessary to throw one of the switches connected with the *A* line to the left-hand contact point and, when it is observed that the left-hand contact points are connected together in vertical rows, it is easy to understand that the lines would be connected together for conversational purposes whenever an *A* and *C* switch lever are thrown to the left and connected to the same bus-bar. It may be observed that the vertical bus-bars are lettered *G, H, I, J* and *K*. Now, if we assume that lines *A* and *C* are connected together, the bus-bar *J* is, of course, in service. If we desire to connect lines *B* and *D* together, we can make use of the bus-bar *I*, and if lines *E* and *F* are required to be connected together, we make use of the bus-bar *G*. In this manner it will be observed we have produced a simple and easily understood switching arrangement, which will permit of any combination of line connections, and at the same time it can be built up with switches of a simple type.

I have seen a number of diagrams published showing differant methods of transposing telephone lines. Will you give me a diagram showing the proper way to transpose the wires of two ten-pin leads.—O. G. W., Wisconsin.

The diagram submitted herewith shows a standard transposition scheme. It will be observed that the upper ten wires have been numbered from one to ten and that the wires intended to be placed on the lower cross-arm have been numbered from eleven to twenty. It will further be seen that the vertical lines lettered *A, B, C* at certain intervals represent quarter-mile divisions of the line—that is to say, the distance between the vertical lines is 1,300 feet.

In locating transposition poles, it is usual to measure a distance of 1,300 feet from the first open wire fixture and to mark the pole nearest the point so measured with the letter *A;* then measure a second distance of 1,300 feet and mark this point *B;* then proceed to mark the third distance of 1,300 feet and mark this point *C;* then continue to measure off the 1,300-foot spaces, marking the poles as shown upon the diagram submitted.

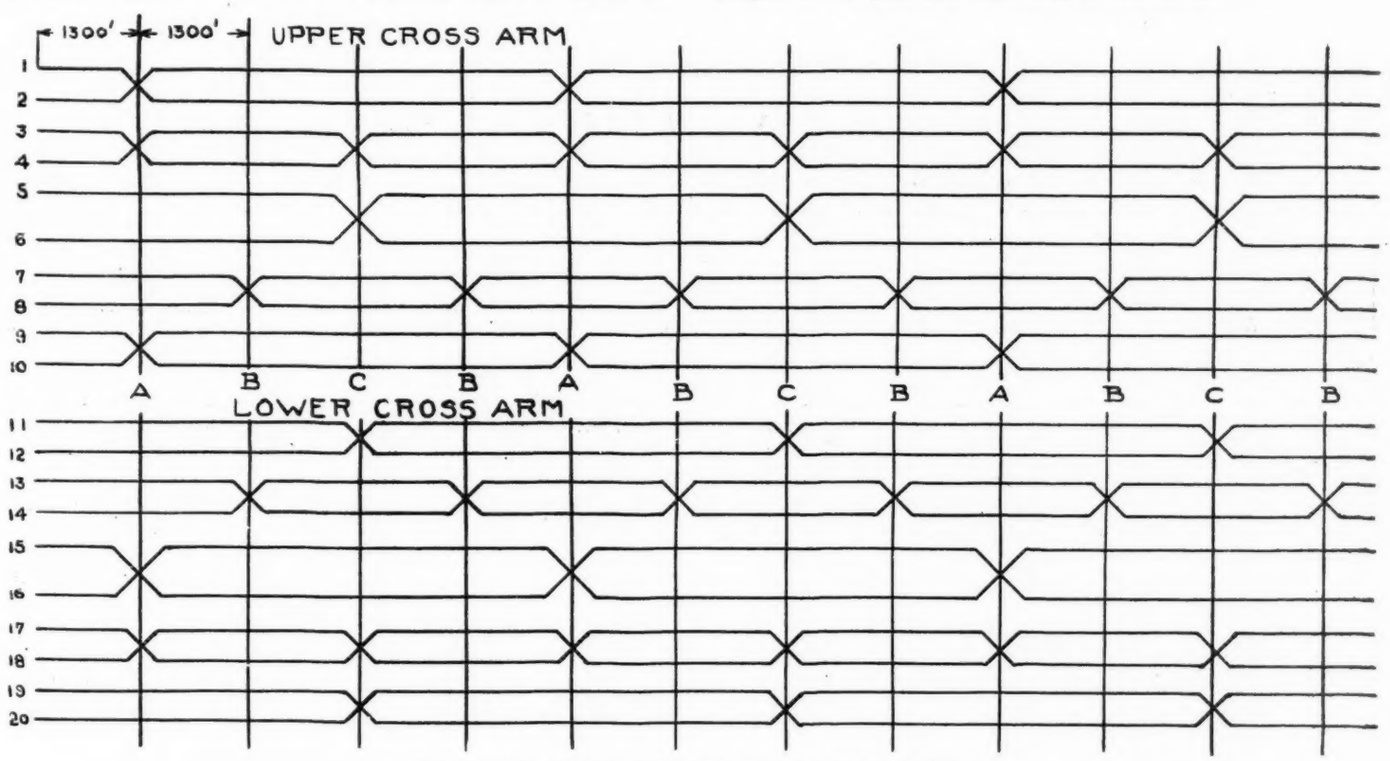
It will be observed that the wires 1 and 2 upon the upper cross-arm have a transposition made every mile and it is these mile distances which have been marked *A*. The wires 7 and 8 have been marked *B*, and the transpositions have been made every half mile. The wires 5 and 6 have been marked *C* and transposed every mile, breaking exactly across the centers of the transpositions of the wires 1 and 2.

In addition to the above transposing points, the wires 3 and 4 are transposed between the points *A* and *C*, and breaking across this transposition, it will be observed that we have the wires 7 and 8, which are transposed every half mile.

Now, referring to the lower cross-arm transpositions, it will be observed that wires 11 and 12 are transposed according to the *C* and *C* transpositions, and that this transposition breaks across the center of the 1 and 2 wire transpositions on the upper cross-arm. The remaining transposition should be made as shown in the diagram.

When a pole line contains more than two cross-arms transpose the 3, 5 and 7 cross-arms, like the first, and all cross-arms bearing even numbers should be transposed like the second cross-arm from the top.

I am glad to see the interest that is being taken in my poorly grounded line. I feel like taking off my hat to the man that signs himself F. W. S., New York, for he is on the right track. I had thought of his plan and knew that it was O. K.



Transposition scheme of two ten pin cross arm pole line.

Mr. F. W. S. of New York: You say assuming that the entire line is not in a dry country, that you would run a second wire for

a return ground. The line goes through a dry county its entire length. It is from 75 to 200 feet to water. I have ten telephones on this line, 5 bar 1600 ohm. I think that I have solved the problem, that is, for a while at least, for I can ring clear through without any trouble. The way I grounded my line is as follows: I soldered twenty feet No. 8 copper wire at the top of galvanized ground rod and dug holes seven feet deep under the eaves of houses where telephones were placed so I could get moisture when it rained. I drove the rods in the holes until the top of the rod was at the bottom of the hole. I then coiled about ten feet of the wire in the bottom of the hole, put in one-half bushel of charcoal and then filled up with dirt, then soaked well with water. I forgot to say that the telephones are twelve miles apart, so you see that it would not be practical to run a second wire for a ground, that is, and still have a grounded line.—G. T. M., Mexico.

This question of producing a ground connection in districts where permanently damp earth may be reached only after going 75 to 200 feet into the ground is a very interesting one. We have referred to this subject several times before, and the communication appearing above indicates that the original inquiring correspondent has secured temporary relief by placing his ground connection so that moisture can come into contact with the ground plates. The editor believes, however, that the response of "J. C., Canada," appears to be along the same lines and may be the best way to solve the problem. "J. C.'s" answer appeared in the September TELEPHONY, and it was recommended to place the ground connection in the ground immediately under a cess-pool. It appears as though this plan will be worthy of a trial in case the service is again interrupted.

In using the expressions "main cross connecting" and "intermediate cross connecting board," what should I understand as being the difference in the expressions. I know what the main cross connecting board is for, but am not entirely clear as to the use of the intermediate board. I have one in my exchange but do not know how to use it.—F. A. B., Ohio.

The main cross connecting board is an arrangement which permits of your connecting any switch board line to any incoming line wire or cable circuit by a simple re-arrangement of the jumper wires, which are located in the main cross connecting board.

An intermediate cross connecting board is of no service, and, in fact, it cannot very well be applied unless multiple jacks are used in an exchange, and when an intermediate cross connecting board has been installed in combination with multiple jacks and a main cross connecting board, the functions of an intermediate board have the effect of permitting any change of relation between the multiple jack of a given line circuit and the answering jack and line signal of the same circuit. If you have an exchange where every operator attends, say, one hundred lines, and you find as many calls coming in on one position as upon another, then you need not disturb your intermediate cross connections. However, if you find that one of the operators is required to attend to many more calls than any of the other operators, then the intermediate cross connecting board should be made use of in the direction of reducing the number of busy lines terminating at the busy operator's position and distributing the in-coming call terminals of the busy lines among the remaining operators. In this way it will be observed that the not-busy lines can be cross connected to the busy operator's position and thus permit a uniform division of the work.

It will be observed from the above that subscriber No. 20 may originally have had his lamp signal and answering jack terminated upon position No. 1, but if this position is a busy one, then the subscriber's intermediate cross connecting wires will be shifted so that when a call comes in over line No. 20, while it is still connected with the multiple No. 20, it does not light the lamp No. 20 upon the first operator's position. It may light the lamp of, say, answering jack No. 450, and that without introducing any complications, for an answering operator is not required to know the number of the calling party when making a connection with the multiple.

Briefly, therefore, an intermediate cross meeting board is an arrangement which permits of uniformity in distributing the work among the different operators of a switch board.

CONCERNING THE KELLOGG

Expressions from the Independent Field Show that TELEPHONY'S *Policy Meets General Approval*

The response to TELEPHONY'S invitation to Independent telephone men to send in letters embodying their views on the Kellogg case is gratifying in the extreme. Many of these communications were confidential and, of course, are therefore not reprinted. Other writers requested that their names be withheld. This, too, was granted. Frankly, however, we prefer letters that can be printed. The question simply is this: Is the Kellogg—a Bell adjunct—deserving of Independent support? TELEPHONY says "No." What do *you* think about it? Give us your frank, unbiased opinion.

IT IS in no vain-glorious spirit that TELEPHONY reports that both the leading telephone manufacturers and operators in the Independent field indorse and commend the stand this publication has taken on the Kellogg question. In the September issue TELEPHONY reiterated its reasons for not accepting the advertising of the Kellogg Switchboard and Supply Company so long as it remains under the control of the Bell monopoly. It was considered timely because the surrender of another telephone journal to the Kellogg lure—and lucre—left TELEPHONY the only Independent publication which declined to wave the Independent flag with one hand and take Kellogg money with the other.

Also, in the September issue, letters and comments were invited from men in the field bearing on this particular phase of the Independent crusade. It is gratifying to state that every letter received on this subject commended the policy which impelled TELEPHONY to assume this position. Some of the letters contained unkind remarks about the so-called Independent journals who print Kellogg advertisements, and we admit, too, that by implication these letters accused TELEPHONY of foolishly passing by the chance of reaping the same financial reward, and missing the opportunity to separate the Bell from some of its ill-gotten gains. These letters are not presented—not because TELEPHONY is afraid to print implied criticisms of its own worldly wisdom, but for two other reasons, namely: First we do not care to attack our contemporaries, who claim a right to print what they please, and second, the writers of such letters probably might not like to see them in cold type after all.

The review of the Kellogg case and the reaffirmation of the Independent platform on that subject in the September issue of TELEPHONY have awakened new interest throughout the field. The Independent manufacturers especially are aroused over the question. None knows better than they

how close is the alliance between the Kellogg concern and the Bell trust, and it is gall and wormwood to them to know that an Independent operator can be cajoled into paying his good money to the very parties who are doing their best—or worst—to crush the Independent movement, undermine Independent telephone securities and discredit Independent companies which are likely to give the Bell sharp competition.

The Independent manufacturers are thinking very seriously of the Kellogg situation. One of the prominent men in the trade has taken the matter up with the International Independent Telephone Association. Naturally, that manufacturer would like to know how good is the standing of an Independent exponent who forms an alliance with the Kellogg concern. That question certainly is not hard to answer.

One angle of the situation which has developed during the last month is that the journalistic apologists for the Kellogg company—who are, of course, beneficiaries as well as apologists—are seeking to justify their action by saying: "Oh, well, the Kellogg will be an Independent company again as soon as the courts settle the case." Until that time comes, however, this defense is not very satisfying to the manufacturers who are forced to see the Bell concern actively competing in the Independent field.

It is generally conceded that now the Kellogg is Bell through and through. The International association has warned all Independents to beware of it. Maybe some time in the future the courts will wrest control of the company from the monopoly and invest it again in Independent hands. TELEPHONY earnestly hopes that such will be the case. "'Tis a consummation devoutly to be wished," as a certain Mr. Hamlet said, but it hasn't arrived yet. It may come this fall, and, then again, it may not come for a number of years. Perhaps it will never come. Meanwhile the Kellogg is a Bell-owned, Bell-controlled company. Independent telephone men should have nothing to do with it, for the simple reason it is an ally of the monopoly which is leaving no stone unturned to crush competition.

A political platform constitutes the creed of a political party until changed or rescinded. The International Independent Telephone Association has put an anti-Kellogg plank in its platform. That plank is a fair one, for it provides that if the Kellogg ever returns to the Independent fold the ban will be lifted. But the Kellogg concern is still on the other side of the fence—the Bell side. Until it is purged of its Bell affiliations it is not deserving of Independent support. That is what the International association asserts, and that defines TELEPHONY's position.

That this assertion and this position are in accord with the sentiment of the Independent field the following excerpts from communications received attest. For obvious reasons the full names of the writers are withheld:

EDITOR TELEPHONY—We have just received your September issue and we note your arrangement of our copy, which is very satisfactory. * * * We were especially interested in reading your editorial and the article concerning the Kellogg Switchboard and Supply Company. We were very much surprised to note in the August issue of another trade journal two and one-half pages of Kellogg advertising and we would beg to advise that we are taking this matter up with the publishers and bringing as much pressure to bear as we possibly can. We are glad to note that you are going to "stick," and not give up your old policy of not selling space to the Bell concern. Please send us two additional copies of your September issue.—"Advertising Manager."

EDITOR TELEPHONY—In your last issue you ask what some of us think about the Kellogg business. My observation has been that any one who disseminates matter favorable to the Kellogg company is either Bell owned or under the influence of that octopus. So kindly advise why we operators should not correctly classify in that category those journals of the telephone field which carry Kellogg advertising. Looks to me as if a paper which will accept Kellogg money and undertake to place that concern favorably before its readers is guilty of the greatest injury which can possibly be done to the Independent cause.

For one, I most heartily commend TELEPHONY's position on the Kellogg question and in refusing Kellogg advertising.—"MISSOURI INDEPENDENT."

EDITOR TELEPHONY—Glad to see you are not going to stultify TELEPHONY by letting up on the Kellogg concern. So long as it is a Bell adjunct how can any Independent who is true to the cause do otherwise? By the way, don't forget that the Western Electric is trying also to break into the Independent trade in this section. Independents should be warned that the Western Electric Company is admittedly the manufacturing end of the Bell company.—SUPPLY DEALER, Kansas City, Mo.

EDITOR TELEPHONY—I understand that some of the reasons assigned by certain so called Independent telephone journals for carrying Kellogg advertising is because they "are bound by contracts."

Please tell us how long those contracts run—or are they ninety-nine year leases? The Kellogg company has been Bell for over five years now!—"NEW YORKER."

EDITOR TELEPHONY—The fact that Kellogg advertising was recently accepted by another of the journals of our field has given this concern occasion to inquire into the aforesaid journal's policy, but we do not get a great deal of satisfaction. We have taken the matter up with the association, that it may give it the consideration it deserves.—"MANUFACTURER."

EDITOR TELEPHONY—The only way to get Kellogg *stamped* out of the Independent ranks, in my opinion, is to *stamp* it. Just as long as we continue to tolerate it—to advertise it, rub up alongside of it, speak complimentary (or even evasively) about it and wink at our neighbor's buying it—so long will the Independent manufacturers suffer, while the whole Independent field is in danger of being swung gradually more and more each month in the direction of the Bell.

It's high time to get busy and fight. Fight hard. Don't be afraid to show how you stand on this matter, if you have any interests at stake.

As an operator, it looks to me as if the Independent manufacturers were the ones vitally concerned, and yet I haven't seen nor heard of them making any very strenuous efforts to protect themselves. Why don't they come out and fight, if they are Independents and the Kellogg is Bell?—"OPERATOR."

EDITOR TELEPHONY—You ask what I think of the Kellogg matter. Well, I've bought some Kellogg apparatus in the past three years along with others. It works as well as any thus far, and I got it a little cheaper. So far as I or my subscribers are concerned, we can't see that it makes any great difference whether the apparatus is Kellogg or some other so long as it works. My pocketbook is about the only place I feel matters like this, and thus far Kellogg has helped me there.—"INDIANA OPERATOR."

The tenor of the last quoted letter indicates that the writer does not let his Independent principles interfere with his convenience or his business. Here is one of another character:

EDITOR TELEPHONY—As an Independent operator I have been impressed with the argument made to me many times against the wisdom of buying goods from the Kellogg company or any other house affiliated with the Bell. The Bell company has fought the Independents hard and certainly no Independent should feel like paying money to any friend of the Bell. I am heartily in accord with the motto, "The Independent field for Independents."—A. J. P., Ohio.

EDITOR TELEPHONY—Allow me to say that I consider your stand on the Kellogg situation as being just right. I am sorry that other telephone journals take the position that they do in allowing Kellogg advertisements to appear in their columns before the public, many of whom are not familiar with the facts.—E. R. H., Buhl, Idaho.

In conclusion TELEPHONY repeats that it bears no grudge against the Kellogg concern. It has no personal animosity against that company or any of its officials. Should the Kellogg company return to the Independent camp TELEPHONY would be highly gratified. So long as it is a Bell concern, however, this publication must contend that the Kellogg is not entitled to any favors from Independent telephone men. Present conditions need to be dealt with now. What the future will bring remains to be seen.

MODERN TOLL SWITCHBOARD EQUIPMENT

The Fifth of a Series of Articles Dealing with this Important Subject

By J. E. Hilbish, J. B. Thiess and G. A. Joy

ARTICLE V

INTERPOSITION TRUNK CIRCUIT.

BEFORE we advance into the lamp signal multiple toll board it seems quite essential that we discuss a few of the local circuits, used in connection with the multiple drop toll board to increase the efficiency of the service, and the plant as a whole.

One of the important circuits in a board of this kind is the interposition trunk used by the operators in conversing with one another. At first sight it might seem that a device of this kind would be detrimental rather than beneficial, owing to the fact that the operators might use these means for gossiping with one another. However, in a well regulated exchange a condition of this kind would be impossible, and since each operator is more or less acquainted with the peculiarities associated with the toll lines terminating at her particular position, these trunks would be of great value to an operator who is calling a party in the multiple, in obtaining the information of a nature similar to that mentioned above from the operator at whose position this toll line terminated. Furthermore, these circuits may also be used for information trunks, in which case one end of the circuit terminates at the information operator's position. A circuit as described above is shown in Figure 17. It will be noted that the circuit is jack ended, and these jacks are multipled in each section of the board, so that they are readily accessible to all operators. Directly above the jack it is usual to place a designation strip so as to properly label the same, so that the operator can readily find the particular party desired. It is, of course, understood that the apparatus shown under the position marked "answering" is duplicated in each position of the board. The lamp shown is usually placed in the pilot rail so as to make the same as conspicuous as possible. The operation of the circuit is as follows:

When one operator desires to speak to another she will

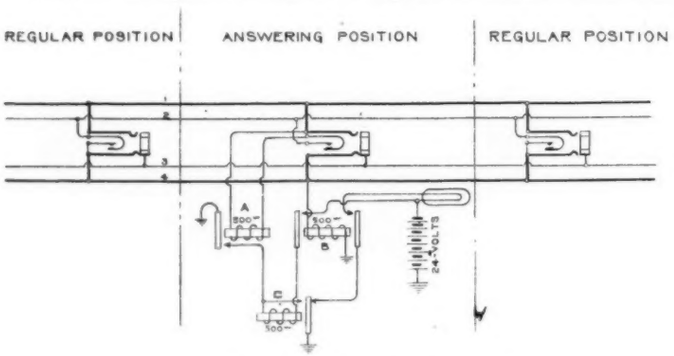


Figure 17—Interposition trunk circuit.

insert the local plug of one of her regular cords into the jack in which the line of the operator desired terminates, which operation will close the make contact in said jack, put battery on the sleeve of the same for a busy test, and also complete a circuit from the battery on the ring strand of the cord to the ring spring of the jack and hence by means of wire No. 4 through relay *B* to ground. Therefore, relay *B* will be energized and attract its armatures, the one to the right closing a local lamp circuit and lighting the interposition trunk lamp at the called operator's position. This will inform this operator that she is desired on the trunk and consequently she will plug into her trunk jack with the local end of one of her regular cord circuits, thus closing the jack contact and subsequently a circuit will be established from the ground on the tip side of her cord to relay *A* and hence by way of the make contacts of her jack to wire No. 2 and the make contact of the calling operator's jack, which has been closed as previously stated, to

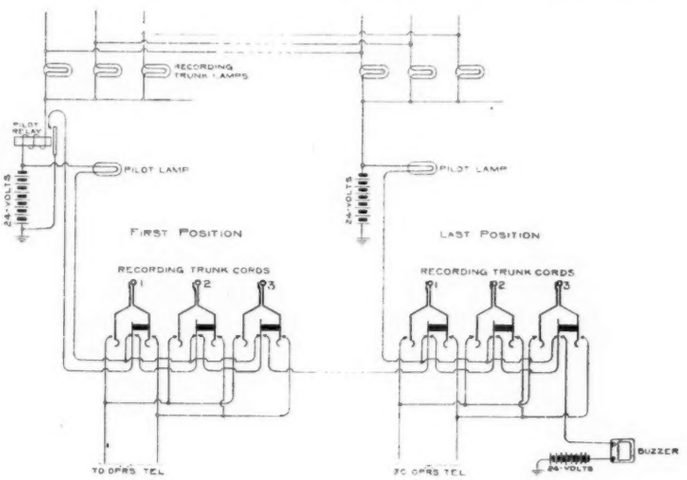


Figure 18—Recording trunk circuit.

the ring strand of this operator's cord and hence to battery. Thus, relay *B* will be energized and attract its armature, which in turn will complete a circuit that can be traced as follows: from the ground on the armature by the way of the make contact of relay *A*, through relay *C* and hence by means of the left hand armature of relay *B*, which has been previously drawn up, as stated above, to the battery on the make contact. Consequently relay *C* will be energized, and the attraction of its armature will open the lamp circuit, thus extinguishing the trunk lamp, and at the same time relay *C* will become permanently locked by means of the following circuit: From the ground on the armature of relay *C* and its make contact through the coil of said relay and then by means of the left hand armature and contact of relay *B* to battery. The operators are now directly connected by means of wires 1 and 4 and in a position to carry on a conversation. When the desired information has been obtained the operators will withdraw their plugs, allowing the apparatus to return to its normal condition. In case either operator withdraws her plug before the other, she will release relay *A*, which will cause the tip relay in the other operator's cord circuit to fall back and thus give her the regular disconnect signal. Should the called operator remove her plug first, she will not again be attracted by the lamp signal due to the locking device previously explained in connection with the operation of relay *C*.

RECORDING TRUNK CIRCUIT.

Another auxiliary circuit which helps to reduce the labor of operation considerably is one used in connection with the recording operators' lines. This circuit is shown in

Figure 18, in which diagram we have shown two recording operators' positions with three cord circuits per position, the scheme being continued in a like manner for any number of positions. The prime object of this circuit is to cause the call to terminate in the first idle position and thus insure immediate attention. This is a condition to be sought for in all classes of telephone switchboard work, but up to the present stage of development this goal has not been attained—at least in a commercial form, except in the one case that we are here describing. Furthermore, each position is so arranged that the same may be cut entirely out of service and calls coming into said position will be immediately switched to the next succeeding operator's position. This is of special advantage during the slack hours of the day when only one or possibly two operators are necessary to handle the work, in which case these operators can receive all calls at their respective positions. This will become self-evident after the following operation has been read. It will be noted that each recording lamp is wired through the pilot relay to battery, hence when a call comes in, lighting the recording trunk lamp, the pilot relay will be energized. Consequently if key No. 1 is in its normal position a circuit can be traced from the ground on the armature of the pilot relay by way of the make contact of said relay to the make contact in key No. 1, and hence through the pilot lamp to battery, thus lighting the lamp. It might be well to state that although we have shown three recording cord circuits per position, the operator has use for but one, and the other two are installed only as a reserve in case of trouble, and consequently the keys of these circuits are always kept in an operated position so as to transfer the call to the next position, as will be explained later on. Furthermore, the recording operator only answers a call when both her line and pilot lamps light, the pilot lamp being the key to the situation. Above we have traced a call to the lighting of the pilot lamp in position No. 1, and the operator in this position, upon seeing the pilot lamp lighted, will plug into the jack associated with the lighted recording trunk lamp, operate key No. 1 and answer the call. The act of plugging into the recording jack will extinguish the recording trunk lamp and consequently the pilot lamp due to the operation of the break contact in the jack. The operation of the key will also open the break and close the make contact of said key and since keys Nos. 2 and 3 are also operated, as stated before, their contacts will be in a like condition. We will now assume that, while the first recording operator is answering the call coming in on the connection just completed, one of the other recording trunk lamps becomes lighted, due to a call coming in over another trunk. The lighting of the trunk lamp will again energize the pilot relay as previously explained, but will not light the pilot lamp in the first position, but instead will light pilot lamp in position No. 2 or the next recording position at which one of the keys is in a normal state. This circuit may be traced, bearing in mind that the keys in position No. 1 are all in an operated position, from the ground on the armature of the pilot relay by way of the make contact of this relay and the make contacts of keys Nos. 1, 2 and 3, to the break contact of key No. 1, and hence through the pilot lamp in position No. 2 to battery. Thus, the operator in this position seeing her pilot lamp light will insert a plug into the jack associated with the lighted recording trunk, thereby extinguishing the same, and upon operating her key she will bridge her

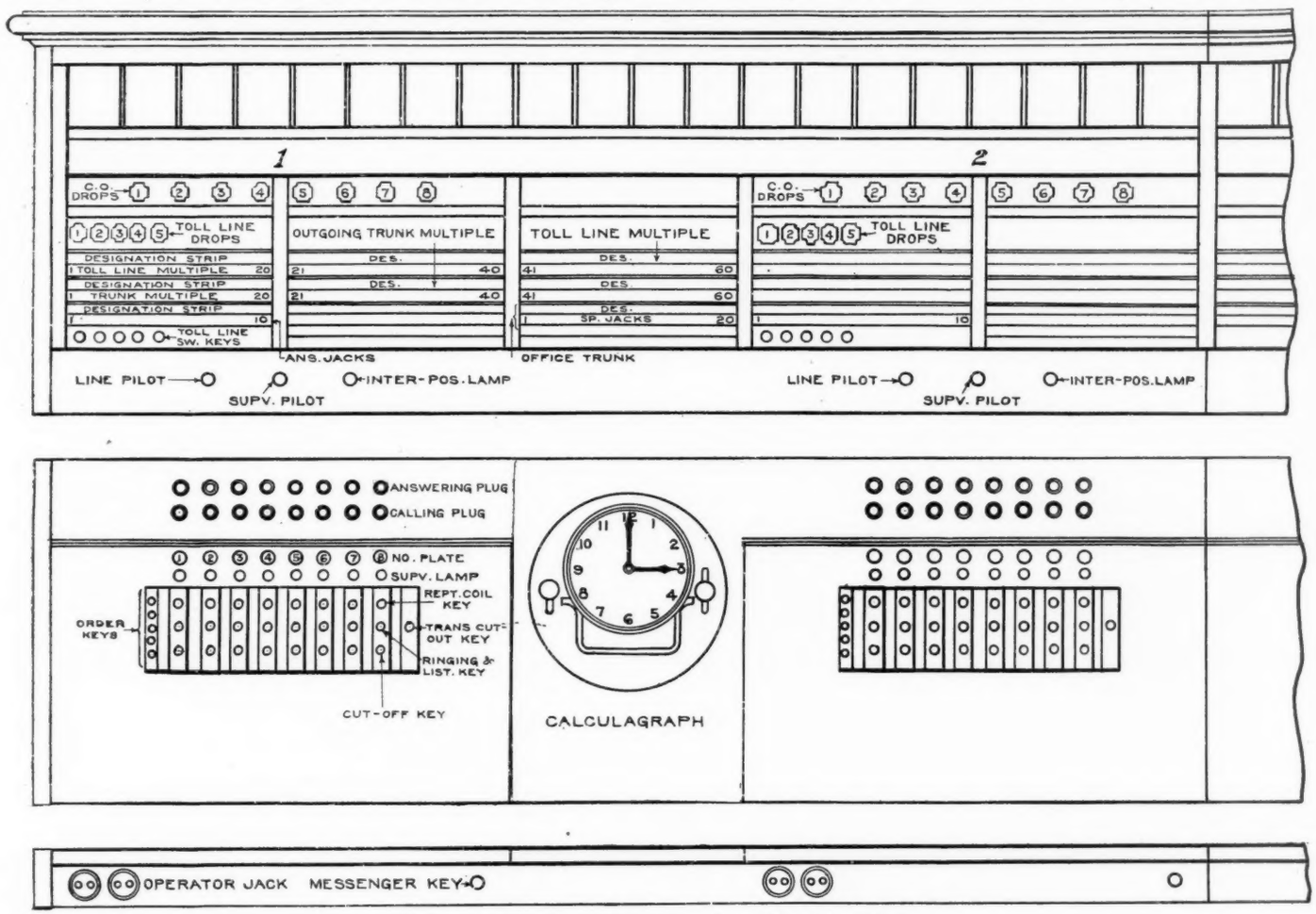


Figure 19—General arrangement of regular toll position.

telephone set across the line and be in a position to converse with the subscriber. This operator will also have the keys of the two cords she is not using in an operated position and hence the next call coming in, will be transferred to the third or next idle operator in a manner identical to that just described. When the keys in all the positions are thrown the circuit through the buzzer will be closed, thus giving the desired alarm, and this will give the chief operator the signal that the number of operators at the recording position are inadequate to handle the business. It is understood, of course, that the bridging of the recording operator's set across the line will give the operator at the local board the regular cord supervision in a manner identical to that obtained when she answers a regular subscriber.

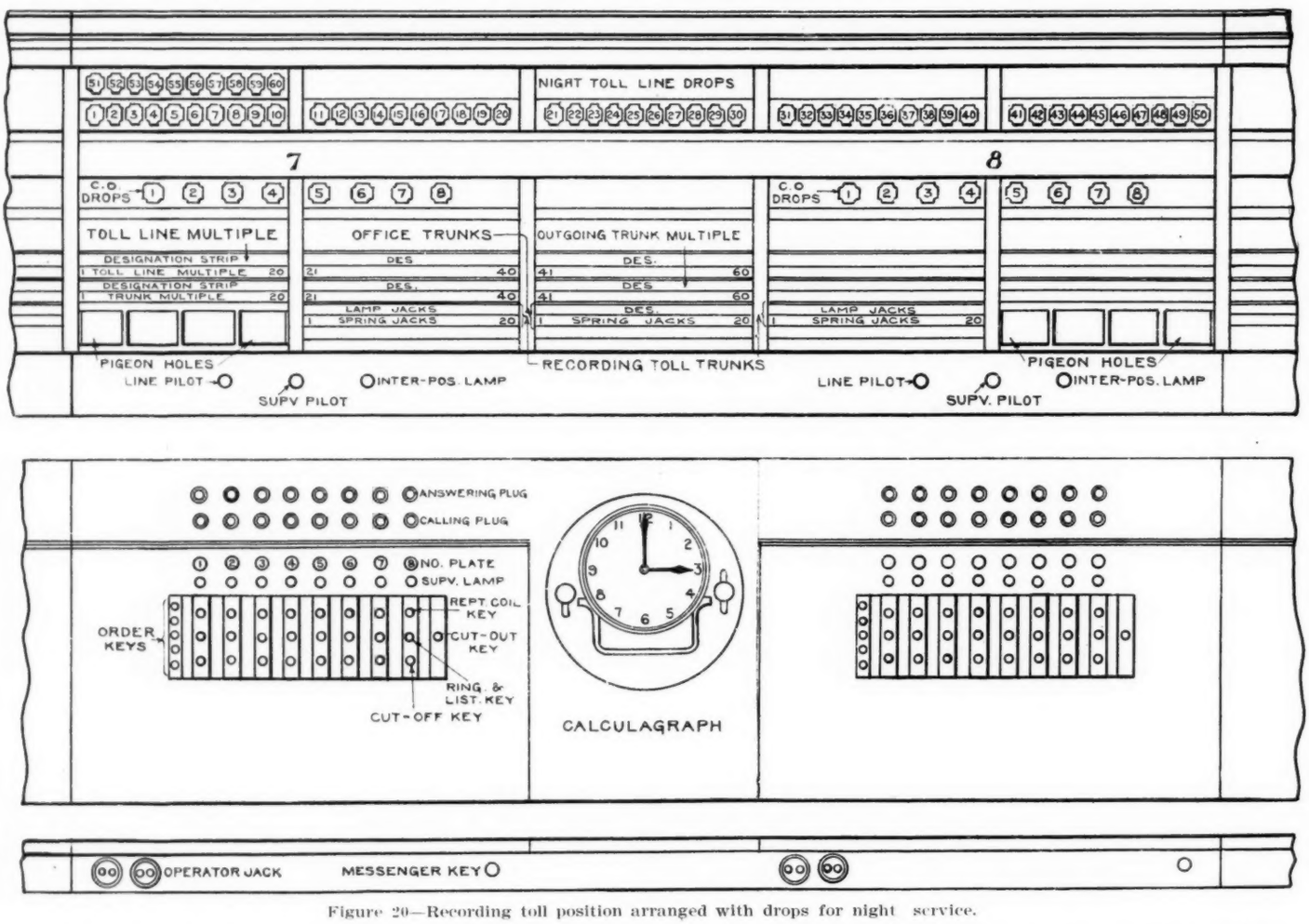


Figure 20—Recording toll position arranged with drops for night service.

HOW APPARATUS IS DISTRIBUTED.

The circuits used in connection with the multiple drop toll board have now been fully discussed and it is but logical that the next step in advance should take us into a discussion of how the apparatus used with these circuits is distributed throughout the toll section so as to give the best possible satisfaction from an operating standpoint. Consequenly we have shown in Figure 19 a fully equipped regular toll section, suitable for an ultimate equipment of sixty toll lines. The regular method of distributing the apparatus is practically identical for all positions, and hence we will devote our attention to one position, namely, position No. 1, and give our reasons for the manner in which we have placed the equipment. It will be noted that the drops have all been placed above all the other equipment in which position they are most conspicuous, and furthermore their operation is not as likely to be interfered with, as has been previously explained. The clearing out drops are mounted at the extreme top of the equipment, and they are numbered to correspond with the cord circuits with which they are associated so that the operator can readily distinguish corresponding equipment. Directly below these are the toll line drops, numbered to correspond with the answering jacks shown below. We have shown five lines per position, this being about the average number of lines that a toll operator can handle. Of course it is impossible to make any positive statement as to the number of lines that can be placed in a position, this being entirely regulated by local conditions, but it has been our experience that five is a pretty good average. Below the line drops we have shown the toll line multiple above which it is usual to place suitable designation strips, so that the same can be plainly marked and thus make the operator's work in locating any particular line as light as possible. The outgoing trunks to the various local exchanges fall next in line and are multipled across the board in a manner identical to the toll lines. In our diagram we have shown sixty of these trunks, which number, at first thought, might seem exorbitant, since this makes the number of trunks equal to the number of toll lines. However, it will be remembered that the telephone exchange must be designed for the maximum load, and therefore, since these trunks represent all the different local exchanges, there must be a few trunks to the local exchange that are idle the majority of the time, and are pressed into service only at such times when the toll calls to that particular exchange reaches a peaked load. Therefore, if there are several local exchanges, these reserve trunks, as they might be called, add up very rapidly, and this accounts for the large number. The answering jacks are naturally

placed at the bottom of the panel as shown. In the extreme left hand panel we have shown the switches for transferring the toll lines from the regular position to the night position, and in the third panel are shown the office trunks to be used by the operator for calling the various exchange officials. In the pilot rail are located the line and supervisory pilot and interposition lamps, in which position they are well isolated from all the other equipment and thus quite conspicuous. It will be noted that the key shelf has been designed sufficiently large so as to give the operator plenty of writing room, while the keys have been placed in position identical to that mentioned in Article No. 2, where the reasons for such placement have been given. The calculagraph has been mounted in the space between the two operators so as to be readily accessible to both. In the front rail of the key shelf has been shown a messenger key used by the operators for calling the girl that gathers up the tickets. This circuit and its operation will be fully explained in the descriptions of the lamp toll equipment to be given later on. The top part of the section is reserved for pigeon holes to file away toll tickets and other stationery which the operator needs.

RECORDING AND NIGHT TOLL POSITION.

Having shown and fully explained the regular section, we will now call your attention to Figure 20, where we have shown a combination recording and night toll position. During the day this section is used as a regular recording section, while at night all the lines terminating in the exchange can be switched so as to terminate in the drop shown at the extreme top of the board, by means of the toll line switching keys shown in the regular position. It will be observed that the general layout of the section is very similar to that of the one already shown, save that we have no regular line equipment and that the pigeon hole space at the top of the board in the other section is utilized in this section for the night toll line drops. In the second panel we have also shown an addition of twenty lamps and jacks for recording purposes. This sort of a section is very serviceable, since during the day time it is very well adapted for the recording work, while at night one or two operators at this section can very readily handle all the business, provided conditions are normal and the toll business has the regular falling off.

GOVERNMENT TELEPHONE IMPROVEMENTS.

The forest service of the United States Department of Agriculture is putting up 2,000 miles of telephone wire on the forest reserves in the northwest, on Lake Chelan, west of Spokane, Wash. In connection with some of this work it is necessary to lower the linemen by means of ropes and pulleys, and attach the line brackets to the rock by drilling holes into solid lava formation. The department will expend $500,000 this year in permanent improvements in the forest reserves in the west, the bulk being on reserves in Washington, Idaho and Montana. The telephone service will keep the different watchers in touch with each other, so that concentrated efforts may be made to stifle incipient forest fires, and in this way minimize the losses which occur annually due to this cause.

Arthur M. Hoge, of the Home Automatic Telephone Company, which has secured a franchise in Brockton and Boston, Mass., was at the former city recently and said that the work there will be completed and in operation, as required by the franchise, within the two years allowed from February 14 last. This gives the company one and one-half years from date to build and equip its conduits, lines and exchange and have 300 telephones located and in operation in the city.

INTERNATIONAL ASSOCIATION PLANS.

The general headquarters of the International Independent Telephone Association will be removed from Cleveland to Chicago about November 1. At a meeting of the executive committee held in Chicago September 20 this plan was outlined and President Theodore Gary, Secretary Charles West and Assistant Secretary John A. Harney are now preparing for the move which it is believed will greatly facilitate the work of the association. Under date of September 16 the following Bulletin No. 4 was issued from headquarters:

"At practically every state and provincial association meeting held since the Chicago convention resolutions have been adopted endorsing the stand taken by the International association in denouncing connection of any sort, for any purpose, with the Bell system, and indications are that similar sentiments will be expressed at Independent gatherings now being arranged. This is encouraging, as a proof that the Independents of the United States and Canada realize their strength, and recognize the folly, not to say danger, of any affiliations which would tend to weaken their position, by permitting disintegrating influences to creep into their ranks.

"Leaving sentiment entirely out of the question, in view of the fact that the Independents' progress has been made in the face of the most determined opposition by the interests now proposing alliances, common sense would dictate a strictly independent policy as the safest course for the Independent interests, now that they have the situation in their own hands. 'No compromise' is a good slogan.

"Officers of the Missouri association are sending out a series of very strong, helpful, encouraging letters to their members, which have been productive of great good. The Ohio association prepares complete, detailed statistical report of the situation in that state at the end of March and October in each year, furnishing copies free to its members to be sent out to their stockholders, bankers, prospective investors, etc., and for use in advertising. The Michigan association has just issued a neat hand-book of general information regarding the telephone situation, for the use of its members. Similar books were issued by the Nebraska and Indiana associations last year. The foregoing are merely cited as examples of concrete methods by which the various state associations can strengthen their organizations, and assist their members. Full particulars regarding these plans may be secured upon application to the Cleveland office. We would like to hear from the officers of any state organization, regarding methods which have proven particularly helpful. Pass a good thing along!

"Many progressive Independent telephone companies are prone to overlook the possibilities of directory advertising. For a number of obvious reasons, space in telephone directories is particularly valuable from an advertising standpoint. With proper methods, the telephone company can secure considerable income from this source, often sufficient to leave a profit after paying for the cost of publishing directory, without any sacrifice of dignity or interference with the purpose for which telephone directory is issued. This matter is worthy attention. Make your directory at least pay for itself.

"Division of territory is a subject which often demands the attention of state and district meetings. In order to properly handle this subject, and settle disputes which, for any cause, may arise from time to time, each association should have its arbitration committee, with definite rules of procedure and power to act authoritatively on cases brought before it. Copy of arbitration rules adopted by the International association, and those in use in a number of states, may be had free upon application to the Cleveland office.

TELEPHONE TRANSMITTERS OF TO-DAY

[ARTICLE NO. 2.]

A General Discussion of the Elements Entering Into the Construction of a Modern Telephone Transmitter

By H. P. Clausen

THE development of a successful telephone transmitter is one of the most difficult problems which a manufacturer of telephone apparatus is required to contend with upon the introduction of a standard line of apparatus. It took the Bell people over ten years of constant experimenting and lengthy investigations before their engineers arrived at their present solid back standard. When the Independent companies commenced to introduce telephone apparatus, the transmitter problem was one which they were required to face. The first transmitters introduced by them in the early '90's were nothing more than a constructional modification of the regular magneto tele-

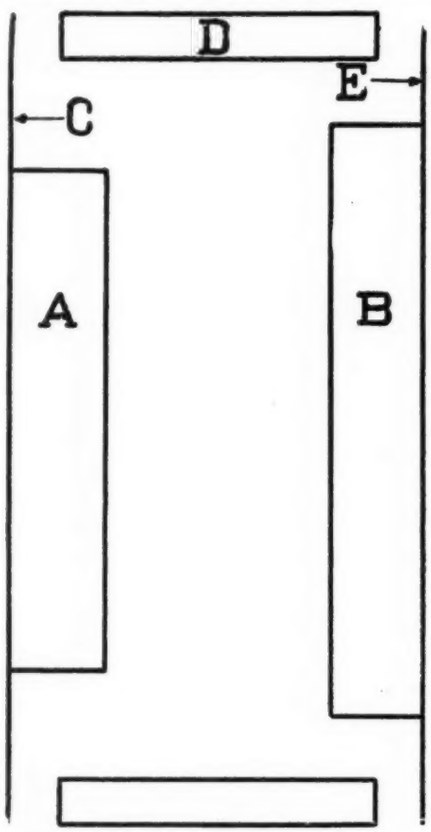


Figure 4—Diagram showing telephone transmitter elements.

phone receiver. It was soon found, however, that it was not possible to give an absolutely satisfactory service from a transmission standpoint while using the magneto transmitter, owing to the great difficulty in keeping an instrument properly adjusted. Several types were introduced with the special object in view of preventing a constant disarrangement of the relations of adjustment between the magnet poles of the transmitter and the diaphragm. However, as stated before, the magneto transmitter no longer proved a wholly acceptable piece of apparatus particularly after it became possible to make use of the microphone transmitters.

The first forms of microphone transmitters were built along the lines of our successful transmitters of today; that is to say, a back electrode was enclosed in a cup shaped chamber and the front electrode was so placed and mounted before the back electrode that with a quantity of granular carbon placed between the two electrodes, the resistance of the carbon between the electrodes was varied by speaking against the front electrode, which was made in the form of a diaphragm. The only difference in the general arrangement of those original microphones and the types used today, consists in a better mechanical construction and the use of materials in the resistance varying elements of the transmitter, which practice and long continued use has shown itself as being but little affected, electrically or mechanically.

In discussing the question of transmitters, the writer believes it best to refer to four types, which have been in general use for a considerable period of time, and while no specific details of construction will be shown, the underlying principles of the operation will be briefly touched upon.

Referring to Figure 4, we have illustrated five elements of a transmitter: *A* represents the front electrode; *B*, the rear, and in the present instance, it represents the electrode

1-MOVABLE 2-SOLID	A		B		C		D		E	
	1	2	1	2	1	2	1	2	1	2
TYPE-1		X	X		X		X			X
TYPE-2	X			X	X	X		X		X
TYPE-3	X			X	X		X		X	
TYPE-4		X	X		X		X			X

Figure 5—Analytical table comparing elements of transmitters.

having a larger diameter than electrode *A*. *C* represents a mechanical connecting means between the electrode *A* and the casing to which it may be fastened. *D* represents a casing which may be flexibly mounted, as compared to the electrodes *A* and *B* or either of them. *E* represents, as was explained in connection with *C*, a mechanical means of connection between the electrode *B* and the casing *D*. In our further discussion it will be observed that the electrode *A* may be mounted upon a flexible disc *C* and this flexible disc may be fastened to the casing *D*, while the electrode *A* may further be fastened to a diaphragm; or, on the other hand, electrode *B* may be found fastened to a diaphragm and the electrode *A* mounted in a permanent manner so as to permit of a certain variation in the distance between electrode surfaces and the tension of the diaphragm which supports the remaining electrode.

For the purpose of preparing the reader for the discussion to follow, reference is made to Figure 5. In the column at the left we have indicated four types of transmitters. At the top of the table we have five divisions lettered in accordance with the elements of the transmitter as shown by Figure 4. That is, *A* represents the smaller

electrode, *B* the large sized electrode, *C* the means which has been adopted for fastening the electrode *A* with the casing *D*, which is used for mechanically fastening together the electrodes *A* and *B*. *E* represents the means which has been adopted for fastening the *B* electrode to the casing *D*. Immediately under the letters we have two

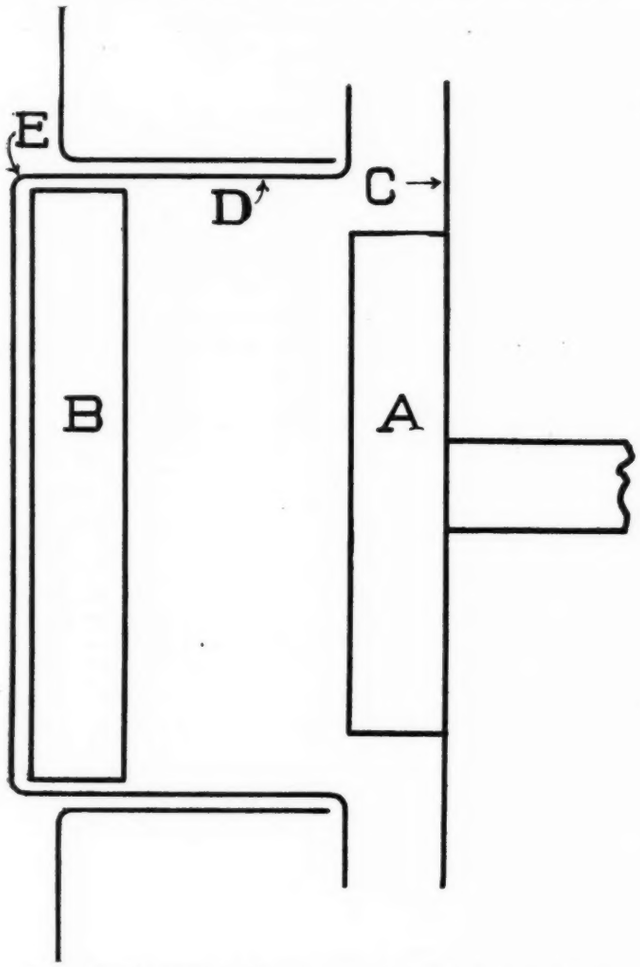


Figure 6—Diagram showing a successful modern transmitter.

columns, 1 and 2. The figure 1 represents in a descriptive manner either a movable or flexible condition; that is, in assuming that the electrode *A* is the electrode which plays back and forth while speaking into a transmitter, then *A* will be considered movable. And in describing the different types of transmitters, a cross-mark in the column designated by the figure 1, will serve as information that the electrode *A* is not mounted solidly and that it is movably mounted. The column headed by the figure 2 is used for the purpose of indicating when an element is not movably or flexibly mounted as compared to one of the remaining elements of the transmitter. Say, for example, that the electrode *A* is fastened to the diaphragm of the transmitter and that the mechanical connection *C* is of a flexible character, then when the electrode *B* is mounted so as to be solidly fastened to the bridge of the transmitter, the electrode *B* will appear as solidly mounted; that is, under its proper heading a cross-mark will appear under the figure 2 in the column *B*. The same is true of the connecting means *C* and *E*. Either of the elements may be movably or solidly mounted when considered in connection with the casing *D*.

In consulting this table it will be observed that the chief differences in the elementary design of different transmitter movements may be observed at a glance.

Referring now to Figure 6, which is to be first considered in this series of four types of transmitters, it will be observed that the electrode *A* is solidly mounted, as will be seen by referring to type one, Figure 5. Electrode *B* is movably mounted in the casing *D* and the connecting means beween electrode *B* and casing *D* is a solid one. The connections of the diaphragm will not be considered in this analysis, for it is obvious that owing to the element *C* being flexible that it is only necessary to mount the elements *B*, *E* and *D* upon a suitable disc capable of being vibrated in order to produce a resistance varying device such as is called for in the construction of a telephone transmitter.

It is obvious that the space between the electrodes *A* and *B* must be filled with a granular carbon, and further, that the granular carbon must be of such a size and general shape as to prevent any possibility of two or more granules of the carbon placing themselves between the two electrodes so as to produce a wedging effect between *A* and *B*. It appears to be a safe practice to allow sufficient space between *A* and *B*, so that with three granules of carbon placed across the space and in contact over their greatest dimensions, that they will just clear the space and not wedge themselves between the electrodes.

With the transmitter constructed as shown by Figure 6, it will be observed that every vibratory movement of the electrode *B* which may be conveyed to it owing to the vibrations of its diaphragm,

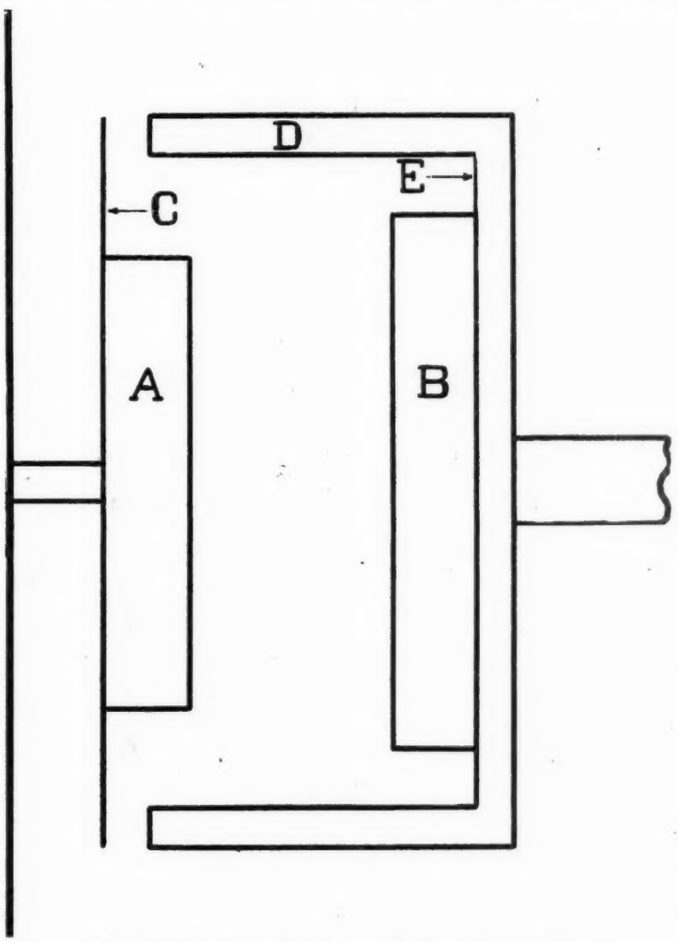


Figure 7—Diagram showing a solid back transmitter.

results in agitating the carbon granules between the electrodes. This form of construction, which permits of carrying all of the carbon granules along with the vibrations of the diaphragm and its electrode, is considered a distinct advantage in the respect of powerful transmission over the earlier types of instruments, in which the compression of the granules due to a movement of the electrode was largely depended upon in the resistance varying mechanism.

Figure 7, which shows an earlier type of instrument, shows this feature particularly well.

The principle of operation of a telephone transmitter regarding the effects taking place between the electrodes and carbon granules is not a matter upon which we all are agreed. The writer believes that in the earlier forms of transmitters altogether too much importance was attached to the variation of resistance produced by an increased pressure between the surfaces of the electrodes and the carbon granules. The writer also believes that the chief function of the vibratory elements of a transmitter is to stir or shake up all the carbon granules in as thorough a manner as possible while the transmitter is being spoken into, and there is no question in his mind that the variations of resistance between the carbon granules is the important consideration in the design of a transmitter, and that the surface contact of electrodes *A* and *B* should be of as low a resistance as can possibly be secured, for when the carbon granules are being agitated while speaking into the transmitter, the variations in resistance produced through the momentary breaking and making of contact between the different granules, is the effect which is of the greatest value in the operation of a transmitter. Assuming this to be the correct theory, it is obvious that the greater the agitation of the carbon granules available for the purpose the greater the power of the instrument.

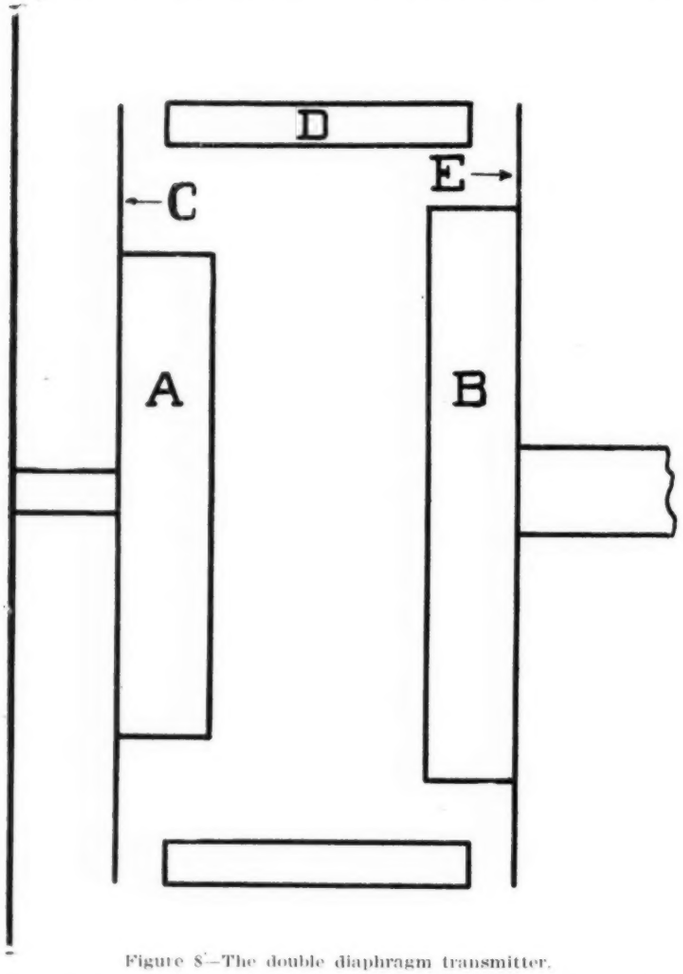


Figure 8—The double diaphragm transmitter.

Referring to Figure 7, which in Figure 5 is identified as type 2, it will be observed that the electrode *B* is mounted in a metal cup designated by *D* and *E*. This metal cup is solidly mounted on a supporting bridge, while the electrode *A*, which is fastened to the diaphragm, is connected to the casing *D* by means of a flexible disc *C*. In the present instance, as is also true in connection with Figure 6, *C* is of mica and when fastened to the casing *D*, it is obvious that the electrode *A* may be oscillated away from and toward the electrode *B* in response to any rarification or condensation of the air before the diaphragm. It will be observed that there is quite a difference between transmitters 1 and 2. Under *A*, No. 1 is solidly mounted and No. 2 flexibly mounted, while under *B*, No. 1 is movably mounted and No. 2 is solidly mounted. Both diaphragms, however,

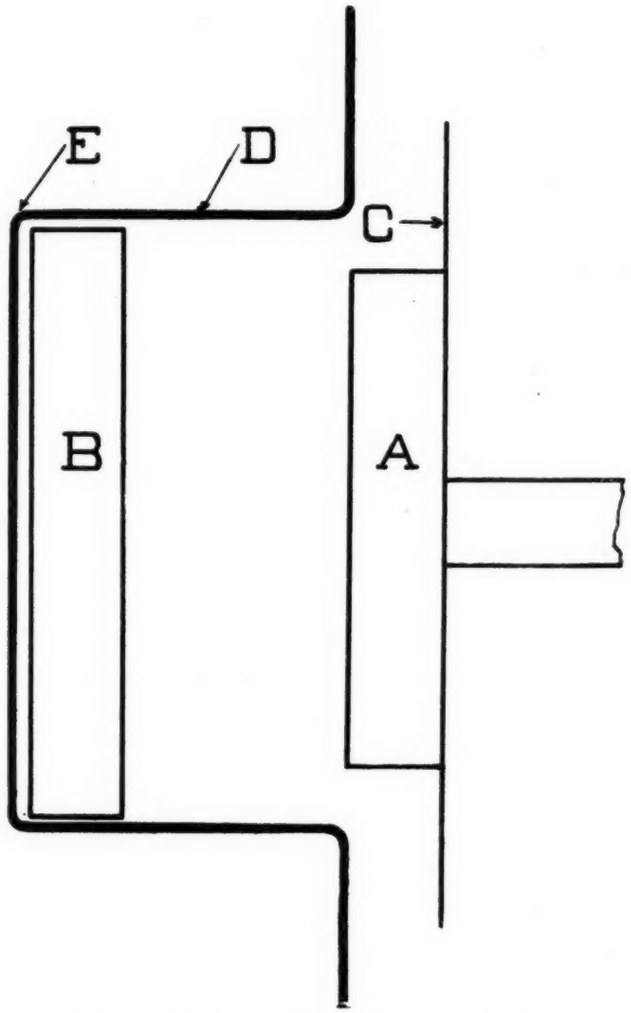


Figure 9—The elements of a telephone transmitter.

have the same auxiliary diaphragm *C*, but under *D* we find an important difference. Type 1 has a containing case which is movable, while type 2 has a containing case mounted in a solid manner. It will be observed that in the operation of the transmitter shown by Figure 7 the electrode *A* can move back and forth and thus increase or decrease the distance between the electrodes. It will be noticed that with this form of instrument a large number of granules must practically remain unaffected by any agitating action while the transmitter is being operated. It is true that the electrode *A* will come into contact with the granules which may surround it on the lower surface; further, that when the electrode presses toward the rear electrode that there is a compression of the granules. The writer believes, however, that with the carbon granules in their normal resting positions, but little decrease of resistance can be obtained by increasing the pressure, and even if there is an increased resistance it must be of little service, if not a detriment, for the vibrations of the diaphragm are so rapid that whenever one speaks against it, the resistance of the transmitter immediately rises, which would indicate that it is the agitation of the carbon gran-

ules which is giving us the most useful results and not the surface contact between the granules and the electrodes.

Referring to Figure 8, we have before us a diagram of an instrument which possesses the advantages of the instrument shown by Figure 6 in the direction of all carbon granules being contained in the case *D*, which is carried back and forth while the diaphragm is causing the electrode *A* to play back and forth. In this type of transmitter, however, the electrode *B* is made the larger one and it is connected by a flexible disc *E* with the casing *D*. Electrode *A*, known as the front electrode, is also connected with the casing *D* by means of the flexible disc *C*. Now, with the electrode *B* solidly mounted in the bridge of the transmitter, it is obvious that when the electrode *A* moves towards the electrode *B*, the disc *C* flexes and the casing *D* causes the disc *E* to flex also. It is here that we have the difference in the Figure 6 and Figure 8 types of instrument. In Figure 6 the casing enclosing the movable electrode carries all the carbon granules directly, while in Figure 8 the casing carries the granules in an indirect manner owing to the flexing of the disc *C*.

It is obvious that a form of construction may be adopted which may permit using either mica or metal for the flexing discs *C* and *E*. Upon analyzing this type of the transmitter, as shown by type 3, Figure 5, it will be found that under *A* the instrument is similar to type 2. In *B* it is similar to type 1, and under *E* it is distinctly different from types 1 and 2, owing to the connecting element *E* being of a flexible character.

Referring to Figure 9, we have a type of transmitter in which the electrode *B* is solidly mounted into the diaphragm of the transmitter. The connecting means, *E*, is, of course, solid. The electrode *A* is mounted so as to be fastened to the bridge of the instrument. *C* is of mica and of a flexible character. The operation of this instrument is obviously to the effect of permitting the carbon granules to be thoroughly agitated whenever the electrode *B* and its diaphragm are placed into vibration. It will be observed, however, that any undue strain upon the diaphragm will affect the adjustment of the front electrode toward the rear. This effect is not present in the instrument shown in Figure 6, where the diaphragm is so placed that the microphone movement may be removed from it without disarranging the position of the diaphragm.

In the first installment of Mr. Clausen's series on "Telephone Transmitters of Today," which appeared in the September issue of TELEPHONY, was the following paragraph:

> In other words, if we take a metal electrode transmitter and find that it gives excellent service for a considerable period of time when used in connection with a current not running over three or four volts potential and place such a transmitter in connection with a high voltage circuit, it may be found, and generally is found to result in a burning, fusing or melting effect where the carbon granules lie into contact with the metal surface of the electrode, and it is this fusing which produces an unequal surface on the electrode and in course of time results in producing what we recognize as the "packing" effect.

In reference to the above TELEPHONY has received the following communication from the engineering department of the Century Telephone Construction Company, of Buffalo, which it is glad to print in this connection:

"Our platinum electrode transmitters have been on the market for over five years, and a very large number of those in use are operated in connection with common battery exchanges where a high voltage is necessary, and, to the best of our knowledge, no difficulty has ever been experienced by burning, fusing, or melting of the electrode nor in the packing of the transmitter.

"As our information comes from actual experience, it is more than likely that Mr. Clausen in his article referred to metal other than platinum."

"In this statement it is reasonable to suppose that the platinum electrode transmitter might be included, by those unfamiliar with its qualities. Defects such as cited in this paragraph have never occurred and never can occur in the platinum electrode transmitter, either with a high or low voltage, and we believe it is only fair to draw the attention of TELEPHONY's readers to this fact."

(Signed) ENGINEERING DEPARTMENT,
CENTURY TELEPHONE CONSTRUCTION COMPANY.

TELEPHONE IMPROVEMENTS IN AUSTRALIA.

TELEPHONY has received a letter from a correspondent in Melbourne, New South Wales, a telephone man, in which he gives some interesting information concerning telephone improvements in that city. John Hesketh, whom he mentions, will be remembered as the famous expert who participated in the electrical and telephone congress at the World's Fair at St. Louis in 1904. Among other things the correspondent writes:

"Further information concerning the program of improvements of the Melbourne metropolitan telephone system, which is to accompany the introduction of the measured rates system, has been given out by Mr. Hesketh, the chief electrical adviser of the central postal department, by permission of the postmaster general. Mr. Hesketh, more than any other man in the public service, is responsible for the conversion, first of the postmaster general, next of the government, and finally of the commonwealth parliament, to the substitution for the present flat, or unlimtied, service rates of a system of measured rates or toll charges. Alongside his work for the commonwealth as a whole, Mr. Hesketh has been making preparations for a regeneration of the extremely unsatisfactory and defective telephone service rendered in Melbourne and suburbs; and when it was resolved last year to expand the general postoffice by building a new, permanent wing, he was successful in inducing the postmaster general to seize the opportunity for introducing reforms which will within the next few years result in a complete metamorphosis of the metropolitan telephone system. These reforms involve the expenditure of $1,250,000, at the rate of about $250,000 a year, during the next five years. As a preliminary, 7,000 new telephones for the existing subscribers are on order, and will be installed as fast as they can be delivered. The grievances of the suburban exchanges are to be met by action which will in a few months cause the removal of many disabilities under which subscribers outside Melbourne proper are laboring. This action involves the erection of a large number of lines between branch exchanges and the central exchange. Malvern and Hawthorn subscribers, whose local exchanges are much congested, will be amongst the first to benefit. The metallic circuit is to be introduced in districts where the lines are subject to much interference.

"It has been announced that the annual rate for Melbourne, Sydney, Adelaide and Brisbane, covering 2,000 free calls, will be $25 for an exclusive line. To many, this has conveyed the idea that the rate applied only to Melbourne proper and the heart of the other capitals, and did not cover the suburban exchanges. Mr. Hesketh dissipated this notion. 'The rate of $25 a year for an exclusive line,' he said, 'applies to the whole of the metropolitan networks. By metropolitan networks we mean the area embraced in a circle around the general postoffice with a radius of ten miles. Anybody within that circle must pay at the rate of $25 a year for an exclusive line.'

"There is now great activity in the Victorian Electrical Branch of the postal department with regard to the changes now in progress, Messrs. Jenvey and T. Howard, the principal officials in charge of local details, having been working at high pressure for some weeks in order to keep pace with the directions of the postmaster general and the central administration."

THE CANADIAN CONVENTION

Independent Telephone Association Across the Border Held a Successful Meeting at Toronto

By H. D. Fargo

A SUCCESSFUL future for Independent telephony in Canada is forecasted by the spirit manifested at the second annual convention of the Canadian Independent Telephone Association, which was held at Toronto September 4. The convention was held in the City Hall and was attended by delegates from every part of the dominion. More than seventy regularly accredited delegates were present, and many of the leading manufacturers in the United States were represented at the convention, either in person or by proxy. The proceedings were of vital interest, including several important discussions on local questions, the adoption of a strong set of resolutions and the election of a staff of representative telephone men as officers to guide the affairs of the association for the ensuing year.

The convention was called to order by President Alpheus Hoover, of Green River, at 11 o'clock. A. F. Wilson of Markham, the secretary, called the roll, which showed the following were present:

J. F. Demers, M. D. National Telephone Company, Levis, Quebec; Alpheus Hoover, Green River; Executive, Dr. W. Doan, Harrietsville; Dr. E. Hart, Brantford; C. Skinner, Sherbrooke; Anthony Ochs, Hespeler, Ont.; F. D. Mackay, Toronto, Canadian Machine Telephone Company; C. B. Adams, Harrietsville Telephone Company; James Ross, Waterford; S. L. Squire, Waterford, and Eli Barber, Vanessa, Norfolk County Telephone Company, Limited; G. A. Briggs, Elkhart, Ind., Chicago Telephone Supply Company; William Doolittle, Sterling Electric Company; E. B. Overshiner and Peter H. Fox, Chicago, Swedish-American Telephone Company; Frank W. Pardee, Chicago, Rock Island Battery Company, Electrose Manufacturing Company, Durant Electric Supplies Company, and Frank B. Cook; Raymond Hendrickson, Cleveland, North Electric Company; C. H. Macklin, Century Telephone Construction Company; A. W. Venning, Belmont Telephone Company Association; Myron Gee, Erie Telephone Company, Selkirk, Ont.; H. J. Minhinnick, Chicago; Levi Moyer, Niagara District Telephone Company; Camby Wismer, Jordan, Ont.; F. Page Wilson, Telephone Age, Toronto; T. R. Mayberry, Ingersoll Telephone Company; M. I. Berger, the Vote-Berger Company, La Crosse, Wis.; A. C. Wisner, Canadian Independent Telephone Company; P. B. Yates, Gould Storage Battery Company, Toronto, Ont.; Alex. D. Bruce, Gormley, and F. A. Dales, Stouffville, Bethesda and Stouffville Company, Quebec; W. D. Fuller, Green River, Markham & Pickering Telephone Company; F. Dagger, Saskatchewan Government, Regina; A. C. Beatty, M. D., Garden Hill; Alexander Neilson, Brown's Corners, Scarboro' Telephone Company, Limited; G. W. Jones, Port Hope Telephone Company, Limited, Clarke, Ont.; A. F. Wilson, Markham, Ont.; John A. Sprague, Sprague Telephone Company, Demorestville; W. H. Crumb, W. H. Crumb & Company, Chicago; J. A. Navarre, the F. Bissell Company, Toledo, O.; Henry Sneath, J. G. Corless, the Burgessville Telephone Company, Burgessville; J. C. Kelsey, Chicago, Ill.; Frank B. Cook, Chicago, Ill.; H. A. Fairman, Hastings Telephone Company; F. P. McIntosh, Elkhart, Ind., Chicago Telephone Supply Company; Wiliam Wade, Wade Telephone Line Company; J. A. Horsey, Scarboro' Telephone Company, Agincourt; W. H. Moore, Canadian Municipal Journal, Montreal; W. H. Wiggs, Mechanics' Supply Company, Quebec City; James G. Sprague, Sprague Telephone Company, Demorestville; Frank M. Bailey, Sound Waves, Chicago, Ill.; H. D. Fargo, TELEPHONY, Chicago, Ill.; B. A. Lillie, Canadian Machine Telephone Company, Peterboro; F. J. Goodman, Century Telephone Constructing Company, Toronto, Ont.; Ralph Horsey, Scarboro'; L. M. Brown, Aylmer & Mapleton Telephone Company; Frank L. Gleeson, Century Telephone Company, Toronto; J. P. Jaffray, County Waterloo, Council; W. H. Lytle, Canadian Machine Telephone Company, Duncan street, Toronto; V. H. Calhoun, Halton Home Telephone Company, Milton, Ont.; G. H. Miller, the Miller Anchor Company, Norwalk, O.; W. A. Taylor, Canadian Independent Telephone Company, Toronto; John Perry, St. Marys', Kirkton and Exeter Telephone Company, Kirkton P. O., Ont.

Dr. J. F. Demers, president Canadian Independent Telephone Association.

The first order of business was the reading of the secretary's report, which was received with applause, showing as it did, the prospects of a good year in the dominion. The report read by Secretary Wilson follows:

"The association has every reason to be congratulated on the results of the work during the past year, not only in the increase of subscribers to the various companies, but also in the number of new organizations perfected and operating, and a large number in process of formation.

"In addition to a vast amount of correspondence, the officers of the association have traveled largely throughout Ontario assisting local people in the formation of public opinion, and aiding in the formation of companies. The president and Doctor Demers assisted Mr. Dagger in the

Manitoba campaign last winter, and contributed in large measure to the great popular victory over the would-be telephone monopolist.

"In Quebec, the Bellechasse company obtained favorable legislation from the government, and also obtained a satisfactory franchise from the city of Quebec, the first city of over 50,000 in Canada to try a live competitive system. The other Quebec companies report rapid progress.

"In Ontario, progress has been most satisfactory and in considerable areas in the province, the Independents have left the Bell far behind. The greatest difficulty met with has been in towns and cities where the councils have, against the wish of the citizens generally, granted a five years' monopoly to the Bell. We might remind the public that under the laws of Ontario, permission is given to municipal councils to grant a monopoly to a telephone company. A monopoly cannot be given to any company other than the Bell, and no municipality can give a monopoly in any other matter over which it has jurisdiction. Not only that, in no other province of the dominion and in no state of the American union can this monopoly be granted.

"So far the development has been greatest in the counties adjacent to Lakes Erie and Ontario, and in New Ontario, but the movement is spreading generally. Nearly every company's report shows rapid growth in subscribers, many doubling in the year. Most of the systems have been brought up to standard both in equipment and outside construction, so that there are only a few single wire systems remaining. From the west, where Manitoba and Alberta have decided on government systems, and Saskatchewan, where the matter is under investigation, reports are very satisfactory; local companies and municipalities preparing to go ahead as quickly as conditions permit.

"The forms sent out by the secretary, not having been all returned yet, it is impossible to give complete figures, but judging from the reports just to hand, and the latest previous reports, we have every reason to believe that there are now from 18,000 to 20,000 non-Bell or Independent telephone subscribers in Canada, nearly all the result of less than three years, against about 90,000 of the Bell, the result of twenty-five years.

"To show the advantages to the public of the Independent telephone movement and of competition, we give several counties in Ontario. Elgin county, outside of St. Thomas, where there still exists the exclusive franchise, there is a population of about 29,000, Bell telephones about 200, Independents over 650. Haldimand, population 19,200. Bell 133, Independents 400 installed and over 450 orders. Parts of York and Ontario, population about 16,000. Bell about 160, Independents about 600. Halton, population 18,400, Bell 300, no competition. Peel, population 19,900. Bell 200, no competition. These figures speak for themselves."

During the noon recess the committees on finance, resolutions and nominations prepared their reports. The committee on nominations submitted the following list of officers which was elected:

President—Dr. Demers, Levis, Quebec.

Vice-President—Dr. Doan, Harrietsville, Ont.

Secretary-Treasurer—F. Page Wilson, Toronto.

Executive Committee—Dr. Hart, Brantford, Ont.; Dr. Ochs, Hespeler, Ont.; A. D. Bruce, Gormley, Ont.; C. Skinner, Sherbrooke, Quebec; Francis Dagger, Regina, Sask.; Levi Moyer, Beamsville, Ont.; J. Dyke, Fort William, Ont.; J. R. Mayberry, Ingersoll, Ont.; G. W. Jones, Clark, Ont.

Auditors—C. B. Adams, Harrietsville, Ont.; Dr. Dales, Stouffville, Ont.

The nomination committee also brought in a recommendation that a permanent secretary be appointed to take up the work of organization generally in the interest of the Independent movement, and that the executive committee personally lend their assistance as much as possible in the interest of the Independent movement in their own respective localities.

The resolutions adopted by the association follow:

AFFILIATION.

That the action of the executive in affiliating with the International Independent Telephone Association be approved.

EMBLEM.

That the emblem (a maple leaf) selected by the executive committee be approved; and all Independent companies are urged to use the same on all their printed matter, while it is hoped that subscribers will adopt the words Independent Telephones in their letter headings.

OFFICERS OF ASSOCIATION.

That no member who is either directly or indirectly connected with a telephone manufacturing or supply company or firm shall be eligible to hold office in this association, nor shall the official headquarters of this association be located upon the premises of any telephone manufacturing or supply house.

GOVERNMENT OWNERSHIP.

That whereas the time is opportune for the government of Ontario to take over the long distance lines, and whereas the city council of Toronto has already petitioned the provincial government to this end,

Therefore, be it resolved, that this association hereby endorses the above action, and would urge upon the government the holding of a plebiscite at our next municipal election in order to ascertain the voice of the people on this subject, and that a delegation be appointed to wait on the government in regard to this matter.

BELL CONNECTIONS.

That whereas the Bell Telephone Company is proposing long-distance connection to local Independent companies in various parts of Canada, and is offering in consideration therefor to abandon the local field in certain sections, and whereas it is the opinion of this convention that any such connection is bound to injure the Independent telephone cause as a whole,

Therefore, be it resolved that this association frowns upon and denounces any such affiliation or connection of Independent telephone companies with the Bell company anywhere in Canada as being injurious to the people as a whole; and that this association endorses the action of the International Independent Telephone Association, held in Chicago, on June 4 of this year, in respect to such arrangements.

EXCLUSIVE CONNECTIONS.

That whereas the Bell company has attempted to coerce all companies to sign contracts precluding such companies from connecting with any other person or company, and from competition with the Bell company.

And whereas such clauses stifle competition and entrench the Bell in monopoly, besides being used to break up Independent interconnection,

Therefore, be it resolved that the action taken by the officers of the association in protesting to the board of railway commissioners of Canada against the ratification of such contracts and requesting the right to be heard in opposition to such proceedings, be approved, and the president be authorized to take such action as may seem to him to be advisable in the circumstances.

George R. Bidwell, of New York, who holds the Independent telephone franchise in New York, was present and invited to speak. He stated that he had obtained his franchise with the view of taking up the electric light and power business, but soon found that these interests were under the absolute control of the Consolidated Gas Company, which in turn was owned by that grasping monopolistic corporation, the Standard Oil Company. He then turned his attention to Independent telephony, and soon he discovered that the average New Yorker had little or no idea beyond the existence of the Bell company. Greater New York, with its immiense population of four millions, was in the extraordinary condition of possessing only 150,000 telephones, but in spite of all obstacles—and these were not few—Mr. Bidwell said he hoped to introduce Independent telephony within its limits within a year. It would be a hard fight, but he believed the Independent telephone interests of the United States were behind the movement.

Dr. Demers, the new president, and the other incoming officers were then duly installed. In taking the chair Dr. Demers made a happy speech which was enthusiastically applauded.

"I feel much pleasure," said he, "at the reception you

tendered me when I walked over to this chair. When I look about this room I quickly find that I am the only French Canadian present, and that, perhaps, I am talking to persons that in many cases cannot understand my native language. But I suppose, as I am your unanimous choice that you knew all that in advance and you did not expect from your president very much in the way of speeches in the future. Instead, I take it that you expect your president will be more of a worker than a talker, and on this head, then, I will feel more easy, and I understand that good intelligent work is the common language of everybody in this room. Before taking the chair I think I am in order in saying a few words on the good work and efforts made by our ex-president, Mr. Hoover, and by A. F. Wilson, the retiring secretary. I have been in pleasant relations with all the officers, and am pleased to recognize that in all the different circumstances under which I met these gentlemen I always found them working the best they could for the success of our organization. The success of this organization depends on the means that you provide your board for their work."

Alderman T. L. Church, of Toronto, addressed the convention briefly with reference to the city's petition to the Ontario legislature last session, asking that similar steps be taken by the Ontario government to those adopted by the Manitoba government looking to governmental control of long-distance telephones and municipal operation by local lines. A campaign of education had been deemed advisable by the government before submitting the matter to a vote of the people, and Alderman Church urged the convention to adopt a resolution strengthening the city's hands in demanding a plebiscite at the next municipal elections. This suggestion was embodied in the resolution quoted above. There was some discussion on this resolution. Mr. Dagger, the Saskatchewan government representative, gave his views, which, in part, follow:

"With regard to such a resolution I should say the provincial government would not decide to take a plebiscite unless it was pretty confident it would carry. Now, I would point out there is a difference between the vote that was taken in Manitoba and the plebiscite that is suggested in this resolution. This resolution merely suggests a plebiscite; it is merely a suggestion of opinion on the part of the people as to what they want. In Manitoba the people voted on what was practically a money by-law for every municipality. That vote in the affirmative gave every municipality permanent powers to borrow all the money required to equip a telephone system. Now, the plebiscite suggested would not be a vote of that description. In Manitoba we had a great campaign and a very vigorous fight was put up on both sides, but it was entirely, and still is, the almost universal opinion throughout Manitoba to-day that had that vote merely been a plebiscite there is not a municipality where it would not have carried; that it was the fact, when the ratepayers who were only entitled to vote, felt that they were placing in the hands of the municipalities the right to borrow money to build telephone systems, induced so many of the rural municipalities that voted in the negative to do so.

"But I would say that the feeling of the country, particularly the west, is absolutely in favor of government ownership of the telephone service. I am not myself in favor of the government owning rural exchanges. I think that every local exchange should be owned and controlled locally. It should be controlled undoubtedly by the municipality, but whether it should be owned by the municipality is a matter which each municipal council and the people should decide for themselves."

Dr. Doan suggested that next year's convention occupy two days. There are many questions, he said, that come up that are of interest to the rural telephone men who are building lines in the country: The question as to whether it is better to build a one-wire line or a two-wire line; to advise men not to put in a little type of line poles of two or three inches diameter at the top, that will carry but one or two wires, and how is the best way to build our lines so as to gradually spread out, and in a few years accomplish something that we will not have to tear down and build again.

Mr. Hoover suggested the holding of the convention at some place where manufacturers could exhibit their apparatus.

The convention then adjourned until the second week of the exhibition next year in Toronto.

The following, which appeared in the Canadian Engineer, shows how the new president of the association is regarded at home:

"J. F. Demers was born at St. Henri, county of Levis, in the Province of Quebec, May 16th, 1872. He was educated for the medical profession, and received his diploma as doctor of medicine at Laval, Montreal, April 1st, 1896. In 1898, at Ste. Octave de Metis, finding the need of quick communication with a fellow practitioner in an adjoining parish, he built a private telephone line. The success of this little enterprise, led the same year, to the organization of a corporation known as the Metis Telephone Company, with a capital of $2,500, operating between Ste. Octave de Metis and Ste. Flavie, province of Quebec. Success crowning their efforts, the capital of the concern was increased, and within two years the three counties of Mantant, Rimouski and Temiscouata were net-worked with telephone wires, the farmers paying an annual rental of $12. In 1900 the little company bought in Bellechasse county the charter of the Bellechasse Telephone Company, and straightway invaded the city of Levis, together with the towns and rural communities in the vicinity; extending the line even into Lotbiniere county, west of Levis. At this stage, Dr. Demers determined to abandon the active practice of medicine and devote his energies to telephone engineering. This enabled him to concentrate his energies on the solution of telephone engineering problems, and to undertake the management also of three other private companies, operating in the counties of Champlain, Portneuf, St. Maurice and Muskinonge. The last mentioned systems have built over 800 miles of pole construction, and the Bellechasse company, some 3,000 miles; all accomplished in eight years. Lately he succeeded in securing a franchise in the city of Quebec, for the National Telephone Company (capitalized at $1,000,000), and expects shortly to construct a modern telephonic service for 6,000 subscribers, connected to all his system.

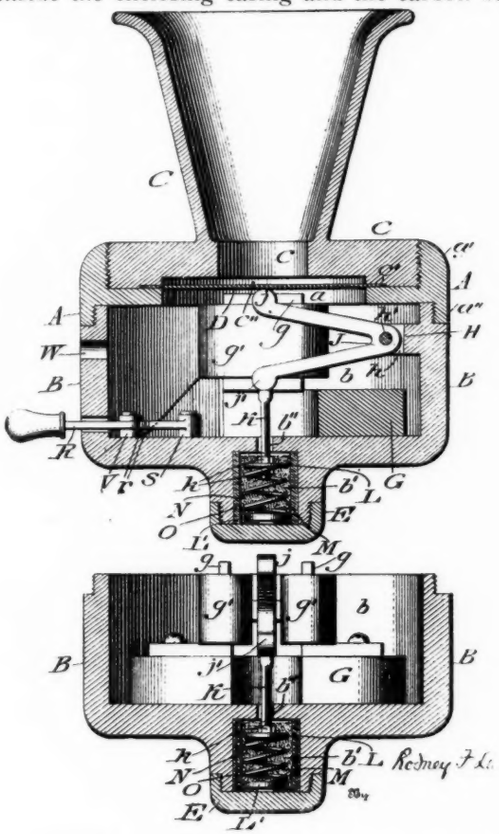
"It may be all true that racial sentiment has contributed largely to Dr. Demers' phenomenal success, but all his work has been achieved in the part of eastern Canada where the fleur de lis reigns supreme. Be that as it may, he has done wonders where others had practically failed, hence is entitled to well-deserved honor. At 34 years of age, he has eight years of invaluable experience in practical telephony, a sound physical constitution, trained executive powers, and indomitable courage, and is heart and soul in the rising movement against telephone monopoly. Theoretically, he believes in governmental and municipal ownership, but has publicly declared that until the time is ripe for the realization of this ideal, he will not rest until the villages, communities, townships and cities, mining camps and prairie farmsteads of Canada are all connected."

Several hundred McKeesport (Pa.) subscribers to the Bell telephone service are indignant because their lines were cut off. The company demands payment in advance. Bankers, merchants and householders suffer alike. Mayor W. H. Coleman declares the demand is an unjust one and a number of the subscribers may band together to make a test case. Many of them have not refused to pay bills for service rendered.

DIGEST OF TELEPHONE PATENTS

By Edward E. Clement

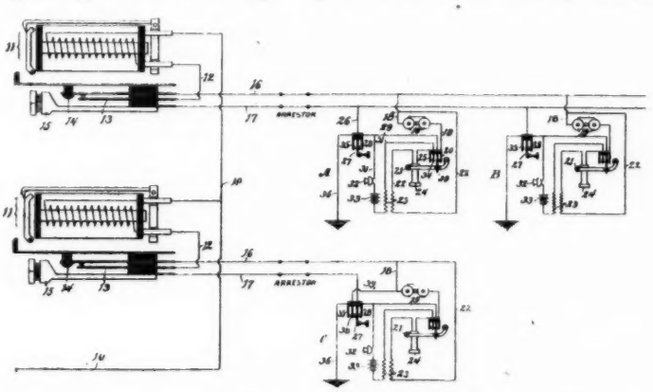
863,617. Combined Telephone Receiver and Transmitter. Ludlow. A single diaphragm serves for both transmitter and receiver. The magnets of the receiver are positioned inside the enclosing casing and the carbon button of



the transmitter is located below the magnet and has a bell crank connection with the diaphragm. Patent unassigned.

863,629. Combined Drop and Jack. Overshiner. The jack structure of this annunciator has a lever pivoted thereon with one end associated with the drop shutter and the other positioned to be engaged by the plug when inserted to restore the shutter to normal. Patent unassigned.

863,705. Telephone Signal System. Eldred. Instead of signaling in the ordinary way with common battery bridg-



ing systems, this system is provided with push buttons for signaling in connection with a common source of current and local batteries for the substation talking circuits. A lever is arranged in connection with the switch hook so that when the talking circuit is completed the signaling circuit is broken. Patent unassigned.

863,720. Telephone Call Bell or Ringer. Kaisling. This is a polarized bell for telephone work, both cores of the magnets being threaded to receive adjusting nuts for the armature. Patent assigned to Milo G. Kellogg of Chicago.

863,852. Transmission of Intelligence by Electrical Means. Kitsee. When voice waves are impressed upon the transmitter at the sending station, current undulations of a similar nature are produced to cause mechanical energy which is converted into electrical energy and finally into mechanical energy at the central station. Patent unassigned.

863,875. System of Selective Electric Signaling. Reed. A vibrating switch which is used in this system alternately connects the current source and a low resistance circuit for

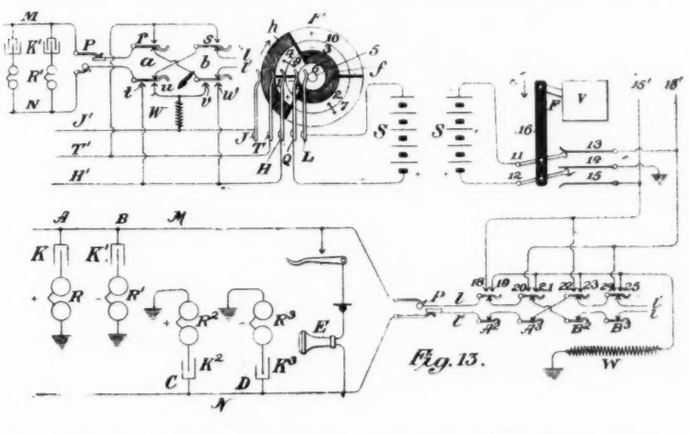
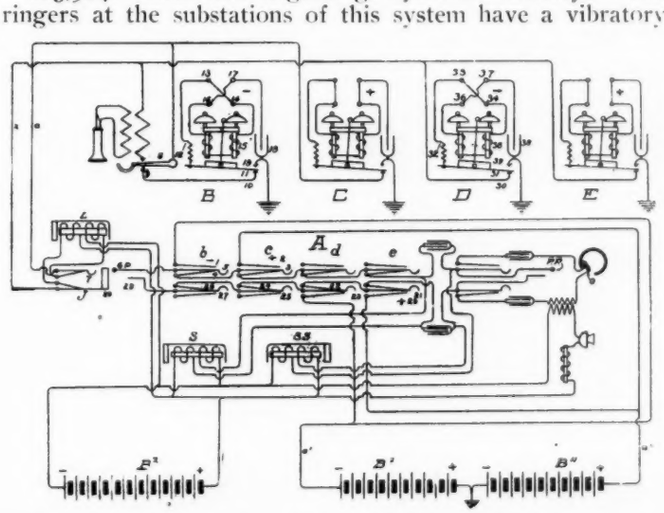


Fig. 13.

charging a series of condensers, and then with a high resistance through which the condensers are discharged. He may charge the condenser through the high resistance and discharge them through the low resistance. Patent unassigned.

863,924. Selective Signaling System. Kidney. The ringers at the substations of this system have a vibratory



make and break device in the signaling circuit which is associated with a condenser so as to assist the selective

effect. Patent assigned to the Century Telephone Construction Company.

863,969. Telegraph and Telephone Cable Core. Dieselhorst and Martin. This cable is wound by twisting a plurality of individual pairs joining the pairs, taking the individual conductors leading from said twisted pairs and twisting them into a pair and again twisting the single conductors leading therefrom into a pair. All twisted pairs have a different length of lay. Patent unassigned.

864,332. Telephone Attachment. Perry. This attachment comprises a push button mechanism which controls the battery circuit irrespective of the action of the switch lever. Patent unassigned.

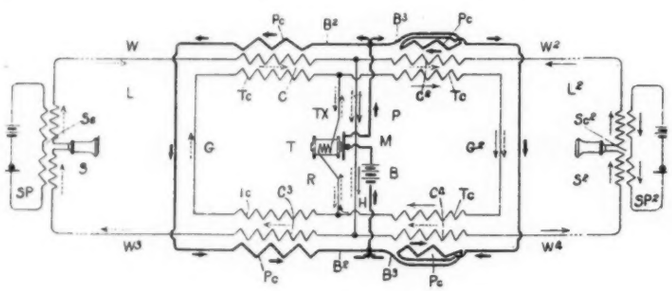
864,382. Support for Telephone Receivers. Mills. A telescoping extension arm is secured to the transmitter arm and pivoted upon its supporting bracket so that any movement of the transmitter arm communicates itself to the telescoping arm. A clip on the outer end of the arm holds the receiver in position to be used. Patent unassigned.

864,454. Testing System for Telephone Lines. Dean. The cord circuits at central have a testing circuit associated with them. A key by its actuation is adapted to connect the testing circuit with any one of its associated cord circuits and a magnet operated when a connection is made with a telephone line prevents the actuation of the testing key. Patent assigned to Kellogg Switchboard and Supply Company.

864,858. Automatic Circuit Closer. Pape. This is an operator's head receiver for head sets and contains a circuit closer or switch which is operated by the spring band in the application of the device to the operator's head. Patent unassigned.

864,887. Supervisory System for Telephone Lines. Dean. The supervisory signal of this system is controlled by a relay normally actuated to prevent the operation of the signal. When a connection is established with a line by the cord circuit, a path around the relay is completed which includes another relay adapted to close the circuit of the supervisory signal so that it will be actuated. Patent assigned to Kellogg Switchboard and Supply Company.

864,713. Telephone Repeater System. Warth. The main and local circuits of this system are each divided to prevent the initial telephone currents in the main circuit

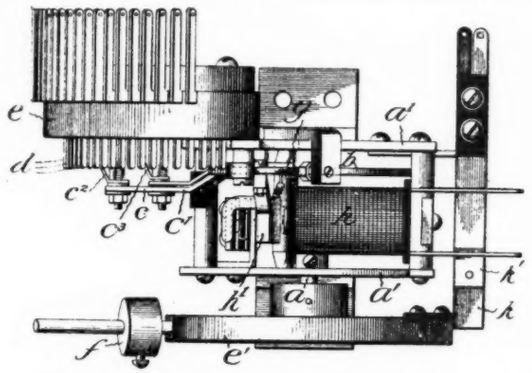


from getting beyond the repeater. A repeater apparatus is used having a receiver and transmitter in repeating relation and an induction coil with a secondary winding in the main circuit and the primary in circuit with the repeater apparatus. Patent unassigned.

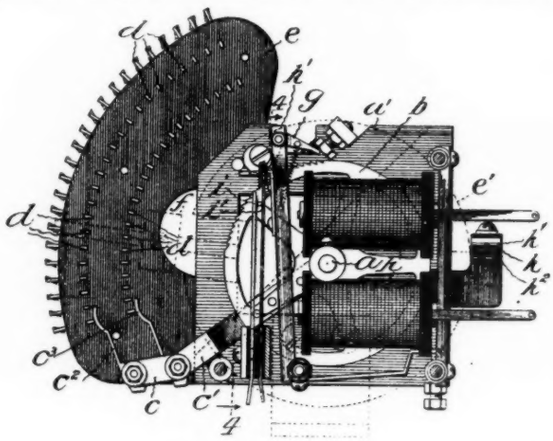
865,215. Art of Telephony. Therrell. A suitable source of energy and transformers in circuit attuned by the essential sound or voice frequencies enable the production of resonance in the transmitter circuit. The transformers are arranged in operative relation to the main line and receivers and the main line has included in it compensating transformers. Patent unassigned.

865,379. Combined Jack and Restoring Drop. Grenier. This is an annunciator having a jack structure carried below it and provided with a lever pivoted thereon with one end extending into engagement with the shutter and the other into the path of the plug so that the shutter is restored when the plug is inserted. Two of the jack springs extend rearwardly beyond their mounting and are bent in opposite directions and secured to the back plate so as to form a support for the entire structure. Patent unassigned.

865,536. Selector for Automatic Telephone Exchanges. Scribner and Enochs. This is an automatic selector switch with a plate having a plurality of contacts radially arranged



and projecting therefrom so as to be engaged by a pair of wiper arms connected to a wheel by a toggle joint so as to be operated step by step when the wheel is revolved by the



armature of the selector magnet. Patent assigned to the Western Electric Company.

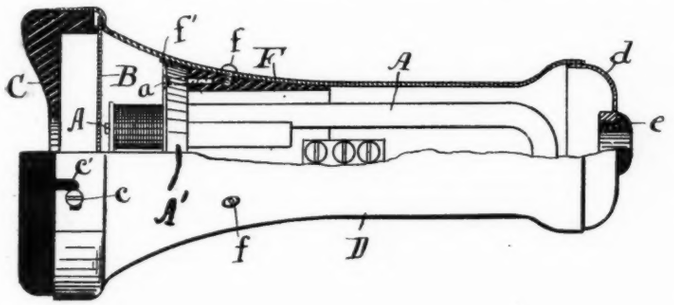
845,219. Electrothermal Cut-Out. Cook. The heating element has one terminal spring secured thereto by screw threads and the other terminal is secured to its respective end cap by an insulating wax. Patent unassigned.

849,159. Fuse Clip. Parker. This is a tubular fuse support and comprises a single piece of metal bent up to form a support and terminal for the fuse tube and an interlocking clip for the terminal wire. Patent assigned to Frank B. Cook, Chicago.

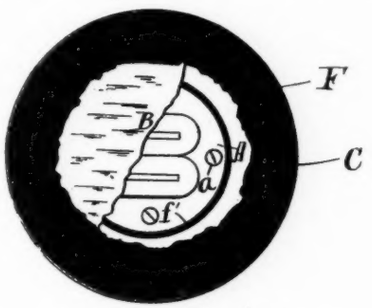
851,420. Electrothermal Switch. Hewitt and Nolan. An airtight chamber having a diaphragm centrally located has a contact rod passing through the diaphragm and surrounded at one end by a heating element. A ground contact is located at the other end of the rod and separated therefrom so that upon an excess of current passing through the heating element, the air is expanded in that chamber and the diaphragm forced downward or upward as the case may be, thus bringing the rod into contact with the ground terminal. Patent assigned to Frank B. Cook.

854,272. Heat Coil. Cook. This device comprises a heat coil having relatively movable end caps one of which is tiltable when the solder is softened so as to allow the release of the opposite end. When the cap tilts or abuts against the ground plate, the parts are restored to normal and the circuit may again be completed. Patent unassigned.

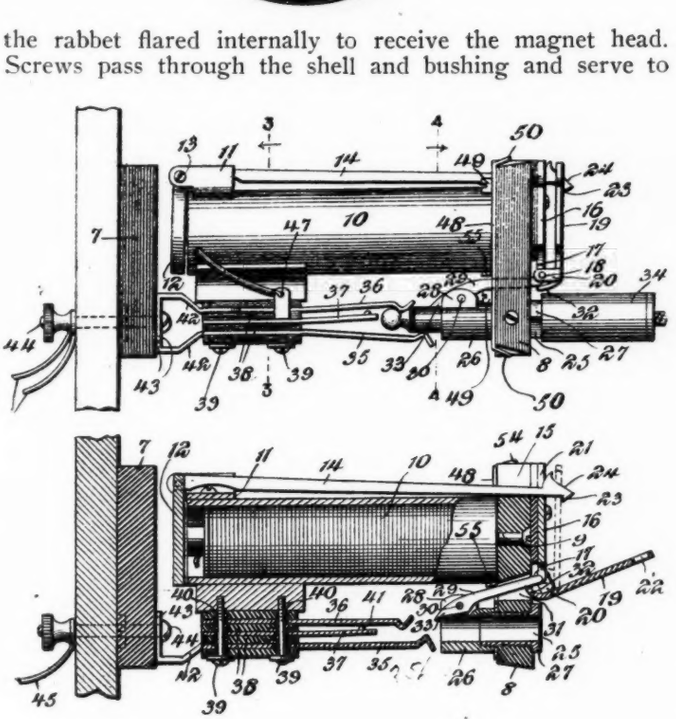
865,937. Telephone Receiver. Quinby. This is a sheet metal telephone receiver having a flared outer end and an



insulating bushing secured within the flared portion and having an internal rabbet in its outer end with the rim of



the rabbet flared internally to receive the magnet head. Screws pass through the shell and bushing and serve to



force the shell into its seat with a wedging action. Patent unassigned.

857,751. Land Anchor. Parker. This anchor is provided with a plurality of cutting blades which force the anchor into the earth and a plurality of extension blades which are operated by a gear meshing with segmental racks to throw the extension blades into engagement with the earth. Patent assigned to Frank B. Cook of Chicago.

860,016. Substation Protector. Cook. This device comprises a suitable insulating block having enclosed fuses contained therein and with thermal protectors connected in circuit with said fuses and lightning arrestors carried by the block and connected in branches of the respective fuse and thermal protector circuits. Patent unassigned.

861,812. Cable Terminal. Cook. Two porcelain halves are secured together to form an enclosure for the cable terminal conductors. Terminal posts extend through each half and suitable fanning strips are formed on the halves so that aerial conductors may be inserted and connected to the terminal posts. Patent unassigned.

861,813. Junction Box. Cook. This junction box comprises a cylindrical sheet metal casing with a number of self-soldering nozzles projecting into it from the bottom so the incoming cables may be soldered thereto with ease and rapidity. Cables may be connected together within the junction box or some of the conductors may be passed through an aperture in the top of the box to a cable terminal mounted thereon. Patent unassigned.

THE LATE G. W. BUZZELL.

George W. Buzzell, secretary of the Vermont and New Hampshire Independent Telephone Association, who died at St. Johnsbury, Vt., was one of the leading Independent telephone men of New England. He was born at Thetford, Vt., February 29, 1851, and when a child his parents moved to Piermont, N. H., where he remained until 18 years of age when he went to Newport Center. There he was employed as a machinist, and there on March 31, 1872, he married Miss Lucelia Babcock of Newport Center. One child was born to them, Lena, now the widow of Albert Owen. For several years she has been her father's efficient helper and bookkeeper. Mrs. Buzzell died April 7, 1903.

Mr. Buzzell came to St. Johnsbury seven years ago and organized the Citizens' Telephone Company. At the time of his death he was the president and manager of the company and was recognized as the principal Independent telephone leader in the state. He led the fight for the Independent companies in the last legislature. A man of strict honesty and integrity he was a natural leader, and once convinced that his principles were right, he was a fearless fighter.

While he was secretary of the Independent Telephone Association of Vermont and New Hampshire he saw the association grow until now it represents 30,000 telephones.

The directors of the Citizens' company have elected Elisha B. Seeley president, to succeed Mr. Buzzell, and the latter's daughter, Mrs. Lena Owen, was named as secretary and treasurer. Mr. Seeley, who lives in Boston, has been identified with the Independent telephone industry since the field was first opened and is well known by all Independent men through New England.

Mr. Buzzell received injuries from a live electric light wire which resulted in his death.

NEWARK COMPANY PROSPERS.

At the regular monthly meeting of the directors of the Newark Telephone Company, held at Newark, Ohio, the regular quarterly dividend of two per cent on the common stock of the company was authorized to be paid October 1st to all common stockholders of record September 30. This company is capitalized for $60,000 common stock and $90,000 preferred stock, the former drawing dividends at the rate of eight per cent per annum, payable quarterly, and the latter at six per cent.

The affairs of the company were found to be in a very flourishing condition, having gross earnings of about $4,600 a month, and operating expenses, including insurance and taxes, of $2,500.

The number of telephone instruments in service has increased during the last four years from about six hundred to over three thousand, and the system is still showing a net increase of about forty telephones per month, with no solicitation.

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EDITORIAL DEPARTMENT

THE INTERNATIONAL ASSOCIATION.

THE new officers of the International Independent Telephone Association are manifesting an active, aggressive spirit that is commendable and augurs well for the record to be made by the organization during the coming year. Within a month the general headquarters will be removed from Cleveland to Chicago, from where the work will be directed thereafter. At a meeting of the executive committee held in the latter city ten days ago the administration adopted a strong resolution against any Bell connections, the text of which will be found in another column of this issue, as will the latest official bulletin issued by the association.

Plans are already being made for the International convention of 1908. There is some talk of holding the convention in Chicago in January during the exposition of the electrical trades, but the question has not been definitely decided. However, it is safe to say that the next convention will break all records anyway. Public sentiment is stronger for the Independent telephone movement to-day than ever before. It is growing stronger every day. In every part of the United States the feeling is becoming more and more a settled conviction that the Bell is determined to mis-use its power wherever it has a monopoly, and that the best interests of the telephone public demand competition in telephone service. The future for the Independents is bright, and they are proving that they mean to realize on these prospects to the fullest degree.

THE TELEPHONE HABIT.

THE way in which the American people assimilate telephone habits, allowing them to get such a hold on them that they unconsciously use telephone phrases when least expected, was well illustrated in the Connecticut legislature when the speaker of the house made an announcement. In explaining an amendment to a bill he referred to a date as "nineteen-o-nine," instead of "nineteen hundred and nine," as is usual. That was the result of the telephone habit.

Telephone operators have grown accustomed to calling naught "o," as the latter expression reduces the possibility of a misunderstanding on the part of the persons at the other end of the wire. The telephone subscriber—rightly taking it for granted that the operator's ways are best—has almost universally adopted the same plan while on the wire, but it is rather startling to hear the same phrase used in ordinary conversation and especially in a legislative body.

We often hear the statement that "the wires are crossed," when plans go awry, and, too, it is not unusual—although not very polite—to tell another to "ring off" when his conversation is uninteresting or contrary to our ideas. The conclusion, then, is that telephone phrases have found permanent places in modern colloquial language. The "telephone tongue" has Esperanto, Volapuk and other similar languages beaten a thousand miles—and a thousand miles of toll line, at that.

WINNING PUBLIC SENTIMENT.

THERE is nothing that the experienced telephone manager lays more stress upon than the value of winning and holding the good opinion of the public. It is human nature to make allowances for one's friends and easy to find fault with those who do not show a disposition to win our favor. The telephone company starting in a new field is always wise in trying to placate public opinion. Of course, primarily, the proper way to secure the commendation of the telephone public is to give good telephone service, but there are many other ways in which a shrewd manager can make friends for himself and his company. Not the least important of these is establishing the impression that the company is vitally interested in helping the town and co-operating with its business men and citizens in adding to their prosperity and advancing the welfare of the community generally.

It is gratifying to note that most Independent managers appreciate this fact and make it their business to "get solid," to use a common phrase, with the general public. Probably no other one thing has had so much to do with making the Bell monopoly unpopular as the failure of its representa-

TABLE OF CONTENTS

The Lusitania's Telephone System.....E. M. Rothelle 195-198
Automatic Service Records.....T. V. Davis 199-200
Improvements in Canada.....M. D. Buffington 201
The Chicago Situation.....F. P. Tiffany 202-204
Questions and Answers.....H. P. Clausen 204-206
Concerning the Kellogg 206-207
Modern Toll Switchboard Equipment.....J. E. Hilbish, J. B. Thiess and G. A. Joy 208-211
International Association Plans..... 211
Telephone Transmitters of To-day.....H. P. Clausen 212-215
Telephone Improvements in Australia.....R. A. Austin 215
The Canadian Convention.....H. D. Fargo 216-218
Digest of Telephone Patents.....Edward E. Clement 219-221
Editorial Department.....H. B. McMeal and H. D. Fargo 222-226
Syracuse Independent Company.....H. C. Slemin 227-229
Legal Decisions Affecting Telephony.....G. W. Hand 230-231
Construction of Concrete Poles.....E. M. Morton 232-233
Construction and Equipment of Toll Lines.Charles H. Coar 234-237
Manufacturers' Department.....W. H. Graffis 238-247
Progress of the Month.....H. A. Downey 248-259
In the Rural Line Districts.....O. H. Brandenburg 260

tives to adopt the same policy. Like the agents for many other trusts, they have ruthlessly disregarded the people s rights and seemed bent upon getting as much for as little as possible, and then contemptuously saying in the face of righteous protest, "What are you going to do about it?" Only when public sentiment invites competition does the Bell usually manifest the least inclination to show the people any consideration. Such consideration, when obtained by main force, is seldom satisfying, and is usually withdrawn at the first opportunity. The public has become well aware of this and now knows that the only permanent safeguard is active Independent competition that will keep the Bell on its good behavior.

The day when a corporation can override the public and expect to escape the consequences is rapidly passing. The railroads, the big life insurance companies and even the Standard Oil trust realize that it is not so safe and easy to employ the high-handed methods that were used with impunity a decade or more ago. It is the part of wisdom to treat the people square. The wise corporation nowadays is steering by this course, believing that all others are strewn with rocks and reefs that threaten disaster.

THE NEW ENGLAND SITUATION.

ONE of the leading Independent telephone men of the country—E. L. Barber—was in TELEPHONY'S office the other day, and expressed the opinion that the Independent movement is about to experience a great impetus in the New England states. This prediction should bring encouragement to every friend of Independent telephony, for it is in New England that the Bell trust has made its most determined and, until lately, its most successful stand against telephone competition. Let Independent telephones but once get a sound, solid foothold in the thickly settled portions of that section of the country and their triumph over the Bell monopoly is as assured there as it is in Indiana, Ohio or Iowa.

The people of New England are in a mood to welcome an opportunity to register a protest against Bell methods and Bell domination. Revelations made before public bodies, official boards of inquiry and legislative committees during the last year have shown the people how much the Bell trust has been getting from the public and how little it has given in return. The newspapers not on the Bell payroll have poured out columns and columns of adverse criticism of the Bell tactics and shown up most effectively the unsatisfactory service, unfair rates and the general disposition of the monopoly to disregard the rights and wishes of the people. With anything like a fair chance it is expected that a competing telephone company would make a splendid showing against the Bell in all of the big cities and towns of the New England states.

Around Boston, the very lair of the telephone octopus, the Bell stockholders themselves are said to be growing uneasy over the disclosures of how their money has been spent in "fixing" the political powers that are supposed to have the influence to bar out telephone competition. (As a matter of fact, competition cannot be barred out forever —merely deferred.) For instance, investigation has brought out the fact that the Bell payrolls show that on a telephone job at Dedham there were sixteen sub-foremen and nine watchmen, while there were but 216 workmen for the twenty-five overseers to "supervise." At Roxbury it was even worse, there being sixty-four sub-foremen and twenty watchmen to look after only 125 laborers. On a Boston job there were sixty sub-foremen and twenty-three watchmen to 123 laborers. Of course, this noble band of sub-foremen and watchmen all had a political pull, and about the only work they did was to draw their pay and convince the politicians that the Bell company was entitled to protection from legislative or official action which might open the way for an Independent company or compel the Bell to make reasonable concessions to the public. Naturally, these revelations have not been pleasing to Bell stockholders. They do not, either, make a good impression on the public which, after all, pays all the bills and make possible the declaring and paying of dividends.

It is understood that as soon as connection with Boston is secured Independent companies all over New England will spring up and seek a share of both local and toll business. Judging from the present temper of the people, too, the Independents will be welcomed with open arms. And success in New England will help the Independent movement throughout the entire country.

CONCERNING "NUMBER, PLEASE?"

A RADICAL difference of opinion in the public mind, as represented in the press of the country, has been manifested during the last few weeks as to the advisability of telephone operators omitting the word "please" from their conversations with subscribers. The origin of all the discussion is the order of Traffic Manager A. J. Ulrich, of the Keystone Telephone Company, of Philadelphia, instructing the 400 operators to drop the word "please" for the purpose of saving time. Mr. Ulrich, who has a penchant for figures, has calculated that the girls have used the word on an average 450,000 times a day, and that the patrons of the company use it equally often. That makes 900,000 "pleases" a day. Estimating that it takes half a second to say the word, which would be speaking at the rate of 120 words a minute, this particular syllable takes 7,500 seconds a day. In other words, it means a waste to the entire force of 125 hours every working day. At least, this is the result of the Philadelphia man's mathematics, and he has accordingly directed his employes to drop "please" from their vocabulary during office hours.

As was to be expected, the question has been made the subject of considerable humorous comment, yet there is food for serious thought in the proposition. The Keystone manager, of course, was actuated by the laudable desire to economize the time of both the operators and the telephone users, and thereby improve the service. There is something to be said, however, in favor of the word "please," even though it does consume half a second of time. Every telephone manager knows the importance of an operator having a pleasant, cheery voice which at once bespeaks the good will of the person at the other end of the wire. The possession of a sweet, clear voice is one of the most valuable assets an operator can boast, and its cultivation is constantly urged by the shrewd chief operator. Furthermore, courtesy and politeness are no mean aids in establishing good feeling between "central" and the subscribers. No doubt, the word "please," sweetly uttered in cooing tones by the girl at the switchboard, has often assuaged the wrath of him (or her) who was becoming impatient at some delay in getting the right number. It may be that some priestesses at the switchboard can tersely say "Number?" in so captivating a tone of voice as to compensate for the absence of "please," but as a general thing there is too little politeness in our busy everyday life and if we are to err it might well be on the courteous side.

A PERTINENT INQUIRY.

GONDEN has broken out again and once more is tilting furiously against the Independent telephone movement. Gonden will be remembered as the individual who formerly used the columns of the Bulletin of the American League of Municipalities for the purpose of abusing Independents and misrepresenting their work for the all too-apparent object of helping the Bell monopoly. Then the International association got after him and adopted resolutions in Chicago in 1906 which showed Gonden up in his true colors.

He kept quiet for a period but is now resuming his attacks in a monthly publication of which he is the ostensible publisher and editor. The recent issue of this publication contains a number of malicious shots at the Independent movement, indicating that Gonden is again at his old task of throwing mean slurs at the anti-monopoly telephone people and servile bouquets at the Bell.

Gondens' attitude suggests the question: "Who is paying for these uncalled-for attacks on the Independents?" His paper is a rabid organ of the anti-municipal ownership element. Its voice is ever raised in behalf of the corporations who want to be let alone, and so long as he confines his efforts to pounding the municipal ownership fad, which seems to be languishing anyhow, nobody is much interested in his productions. It is an eminently reasonable theory that his campaign against municipal ownership is being supported by the big gas companies, traction interests and other public utility corporations whose scornful attitude towards the people who foot the bills often makes municipal ownership attractive to those weary of existing conditions. Taking this ground, no doubt, the Bell regards him as an orthodox advocate of the telephone monopoly. If Gonden is representing the Bell, no doubt he has that right under the constitution, but that does not give him the license to pose as an impartial critic and then give only one side. That is what he is doing, however, and Independents should be advised of his work. When one knows the source of an attack it makes an immense difference in its effect. Nothing but misrepresentation about the Independent telephone movement may be expected from Gonden and his ilk.

LONG DISTANCE RATES.

AN interesting development in the telephone field during the last month has been the abolition of the reduced rate for night service over long distance lines. The change made night service—which was formerly only half—as expensive as day service, and naturally there has been considerable grumbling about it. Naturally, too, this innovation originated with the Bell company. The ostensible purpose was to avoid crowding the night wires, for most people, if possible, preferred to wait till evening to do their long distance business as thereby they saved just half the tolls. Congestion of the wires for night service was the inevitable consequence. To cure this condition, the Bell raised the night rate. Of course, the same result could have been obtained by reducing the day rate, making it the same as the night rate, but that would not have given the Bell a chance to make more money, and nobody needs to be told that is the Bell's principal mission on earth.

Some Independent companies have adopted the same course, while others, seeing an opportunity to score on the Bell, have adhered to the old plan of charging half rate for night messages. Another change in the long distance business is making the initial period of conversation three instead of five minutes.

The new Long Distance Telephone Company of Indianapolis is one of the Independent companies which have altered their toll schedule. In explaining the change, Manager Charles S. Norton was quoted: "All Independent toll line companies, with which we connect, have gone to the three-minute basis and have abolished night rates. Our operators do not know whether a message is passing entirely over our own lines or jointly over our lines and the lines of a connecting company. It is impossible for us to maintain separate schedules for business passing to and from the 6,000 stations with which we connect and to enable us to handle the business with dispatch and uniformity, the easiest way out of the dilemma was to go to the uniform basis with our connecting companies. We have found, after several months' check on the business, that the average initial period of business is only a few seconds more than three minutes."

The outcry against the Bell raising the night long distance rate is particularly strong in New York, where that company is none too popular anyhow. "What is the reason officially given for boosting the charges?" asks the New York Press in a savage tone. "That the breakdown of the telegraph service has given the monopoly too much night business. There is no complaint that the daytime income has fallen off. Undoubtedly it, too, has been swollen by the unusual conditions. There is no pretense that the profits of the company from the night service did not increase considerably. There is no question but that the returns upon the capital invested were greater than ever before. Consequently the reason for raising the rates seems to be one of two—either that the monopoly is incompetent to handle the increased business or that larger earnings, and the ability to make still larger earnings, justify the advance on rates.

"Perhaps, however, there was a mixture of the two reasons. In any case the fact remains that the public interest is not served by the boosting of the night rates, and the action is indefensible. If the freer use of the telephone wires at night was a great public convenience—so much so that the company got more business than it could handle—the course dictated by a desire to be fair to the public was not to raise the charges. The right thing to do was to undertake the improvement of the service. This could be done by furnishing more wires, and also by reducing rates at the dullest daytime hours. Instead the monopoly chose arbitrarily to discourage patronage and at the same time, no doubt, increase its revenues by marking up the night tariffs."

In some of the states below Mason and Dixon's line, the Southern Bell has been frustrated in its efforts to increase the night rate. In Virginia the old night rates on long distance telephone messages from Virginia to out-of-state points are to be restored at once, and application to increase them must be filed with the state corporation commission. This reversal to the former schedule of charges is made at the instance of the clerk of the commission, who has been in communication with Assistant General Manager Crews, of the Southern Bell Telephone Company, who has taken the matter up with the main office. The increased rates, which became effective on September 1, were imposed without the knowledge or consent of the commission. The new rates have now been repealed pending the approval of the commission.

In North Carolina the business men filed a protest with the state corporation commission against the increased night rate.

SAUCE FOR THE GANDER.

SOME times it doesn't pay to dig a pit for another, for the reason that we might stumble into it ourselves. Here's an example: The Bell company in Cincinnati, which has a monopoly of the telephone business in that city, is assailed by fears that it may have competition. With another company in the field—an Independent concern—the Bell officials well know that the trust's business would suffer, for the people of Cincinnati are sick and tired of Bell methods. The Fitzsimmons Telephone Company is the competitor the Bell wishes to hinder.

Recently the Bell called the attention of the city officials to the fact that the Fitzsimmons company had not paid a municipal tax amounting to something like $300. The Bell's purpose in doing this was to stop the Fitzsimmons concern from further operations or compel it to pay the tax. As a matter of fact, the Bell was shouting about the mote in the Fitzsimmons' eye while a beam as big as a house was snugly resting in the Bell optic, for while the Independent

company was charged with being delinquent to the extent of a few hundred dollars, the records showed that the Bell owed the city of Cincinnati over $200,000 on the identical same sort of a municipal tax.

In the past the Bell has refused to recognize its liability for such a tax, but now, having insisted that a competitor be called to account for a similar assessment, the trust virtually admits the validity of the tax and the city officials are going to make the Bell settle. It may cost the Fitzsimmons company $200 but, if so, it will cost the Bell nearly ten times that amount.

The proposition is succinctly described by City Electrician Pfiester, who says:

"If the tax is valid for the Fitzsimmons company, it is valid for the Bell company. I will refuse any further permits to both until the tax is paid by both or the ordinance is declared invalid."

The Cincinnati officials are acting on the undeniable theory that "what is sauce for the goose is sauce for the gander." It is an amusing situation, and furnishes another instance of proof of how blindly and viciously the Bell makes its fight against an Independent competitor. Biting off one's nose to spite his face is a wise, conservative course of action compared to this sort of tactics, but of course no Independents are objecting to such stupidity on the part of the opposition.

INDEPENDENTS GAIN ADVANTAGE.

REFERENCE was made recently to the fight against telephone monopoly in Connecticut. Since then what is, perhaps, the most important skirmish in the battle has been won by the Independent forces, aided and strengthened by a strong public conviction that no public service corporation should have a legalized monopoly—legalized because cunningly devised laws protected it from competition.

Since 1898 the Southern New England (Bell) Telephone Company had been without fear of the Independents entering the state to contest the telephone field, for the reason that any new company was obliged to go to the legislature and obtain a special charter in order to begin business. Having a strangle hold on the law-making body, according to the fashion usually adopted by unscrupulous corporations, the Bell was able to choke off any disposition to grant a charter to a possible competitor. Now, thanks to a new law which public sentiment has compelled the assembly to enact, conditions have changed. A telephone company now can organize under the joint stock laws of Connecticut, and seek a decision by the superior court that "public necessity and convenience" make it advisable to operate. That decision gained, the new company then may go ahead and begin operations. Of course this change in the law was not secured without bitter opposition from the Bell, which would have liked to continue the plan under which it enjoyed special privileges while all other companies were obliged to wrest a permit from an unwilling body before winning a right even to exist. But it is a progressive age, and the legislature could not longer ignore so undoubted

That Independent companies will have any difficulty in acquiring a court decision that "public necessity and convenience" demand another telephone concern in the field is not believed by those conversant with the conditions in New England. The Bell has made itself intensely unpopular by its high rates, poor service and general disregard of the people's needs and wishes, and most communities will welcome an opportunity to have a change.

The Bell in Connecticut already has begun to lay off many men in its construction department and has refused to build lines into new territory, the reason being that with a new company in the field the Bell feared it would not get enough business to justify building new lines into such districts.

Those interested in the Independent movement in Connecticut are much elated over the action of the legislature and consider that it means the successful launching of the competitive crusade in that section where the Bell has held undisputed sway so long.

INTERCHANGE OF SERVICE.

AN EFFORT is being made again in Ohio to revive the question of compulsory interchange of service on long distance telephone calls. Agitation has already started for legislation along this line. Ohio is a network of Independent lines, and the pressure seems to be directed toward compelling the Bell to give Independent subscribers long distance connections.

"With over 436,000 telephones in use in the state of Ohio," says the Columbus Press-Post, "there is one telephone to every ten persons of the state's population. This shows how essential to the whole population of Ohio and the telephone has grown to be as a public utility. So large a number of telephone users is not to be ignored by the legislature when measures are proposed to improve the telephone service in Ohio. The need of perfect telephone service in this progressive day will be more distinctly comprehended when one pauses to reflect on the fact that within a very few years the telephone has gone ahead of the telegraph and is now second only to the postal service as a means of communication.

"More than any other one thing in the many imperative telephone reforms the people want interchange of service on long distance calls. When this was first proposed to the legislature in 1904 by Representative Ely of Ashland county he was laughed at as a crank who wanted the whole state of Ohio to help him compel the arrogant and insolent Bell telephone monopoly to give the users of Independent telephones in his county the benefit of the Bell monopoly's long distance service. Probably no county in Ohio is so completely covered with a network of Independent telephone wires as Ashland county. For years the arrogant Bell telephone trust insolently refused to furnish the people of that county telephone connection with the outside world, even removing entirely the exchange once installed at Ashland, the county seat, because it was not producing sufficient profit for the greedy monopoly. No county in Ohio has more telephones in farm houses, in proportion to population, than Ashland county. The sixteen Independent exchanges, with over 2,800 telephones, and nine toll stations completely cover the county, and almost every farmer in the county who has caught the twentieth century spirit of progress has a telephone in his home. These were the up-to-date citizens of Ohio who were actually being laughed at, not their faithful representative in the legislature, when Mr. Ely introduced his original bill to compel interchange of service.

"Since Mr. Ely broke the ice the Bell telephone trust established an 'exchange' at Ashland with only four telephones, the only Bell exchange in the county, and nine toll stations, the same as the Independents, and by private arrangement with the local telephone companies is giving interchange of service on long distance calls.

"Why should not every county in Ohio be given this same accommodation? It will be if the legislature enacts the necessary statute, as it has promised to do, to create a telephone and telegraph commision with power to regulate service within the state to adjust rates, abolish discriminations and compel interchange of service."

Before anything is done, however, the leading Independent telephone men of Ohio will be consulted and their influence will go far toward settling the question. The men who guide the Ohio Independent Telephone Association have often proved their ability to protect their own interests and their desire to act for the welfare of the entire Independent movement. In other words, the Ohio Independents are "on the job" every day in the year.

WORKING WITH A WILL.

IT IS pretty hard to condemn or be angry with the man who is doing his best even if he doesn't quite succeed. There is enough charity in the human race to induce nine out of ten to say: "Well, he tried hard; he did the best he could, and he ought to be given credit for that even though he did fall down partly." Whatever is one's daily work—running a telephone exchange, preaching sermons, planting and harvesting crops, writing funny stories or playing baseball—should be done earnestly, honestly and sincerely. "Angels could do no more." The man who puts the best there is in him into his day's work can be content to leave the result to the powers that be. In the nature of things he who does the best he can is nearly always sure to succeed. Most failures are due to neglect of the law of sincerity, earnestness and thoroughness.

The exchange manager who convinces the people that he is doing his utmost to supply them with the best possible telephone service, will be surprised to find how considerate the public will be. The chances are this consideration will be due primarily to good service, for even the most stubborn conditions yield to conscientious, painstaking effort, but, anyway, the knowledge that one is doing the best he can goes a long way to excuse the mistakes that may creep in. Do the best you can at all times, and the battle is more than half won. If you don't the fault will certainly rest on your head if the battle is lost.

WHERE THE BELL CUT RATES.

IT IS a favorite trick of the advocates of telephone monopoly to assert that the Independents are willing to demoralize the telephone business for the sake of temporary advantage. For years it has been the custom of the Bell trust to accuse Independents of cutting service rates, building cheaply, ignoring depreciation charges and doing various other expedient things in order to secure and hold patronage. With a "holier-than-thou" air the monopoly has sought to prejudice capital against the Independent movement by alleging that the latter was ready to cut and slash recklessly in order to gain immediate profits without any regard to the future.

It is, therefore, interesting to note that at Monmouth, Ill., the Central Union (Bell) Telephone Company has reduced its rates to $1 a month for residences and $2 a month for business houses. The cut amounts to a twenty per cent reduction, and the explanation is given that the reason for the action is that the local Independent company has given the Bell such a hot competition that extra inducements were deemed necessary to keep any Bell subscribers at all. Of course it is now likely the Bell will declare that "self preservation is the first law of nature," and that the unfeeling Independents compelled the rate reduction. All of which may be true, but it would seem sensible now for the Bell to do less talking about the opposition slashing rates to pieces.

THE USE OF COPPER.

THE sky-scraping price of copper has had a material effect on the telephone construction business the last year, and while there has been a slump recently, still the price looms up appreciably large compared to conditions of a few years ago. When one stops to consider the manifold uses to which the "base" metal is put, as pointed out by the Mining and Scientific Press, however, surprise is universally experienced for the average man if asked to name off-hand, the uses of copper, would be likely to reply that the metal was used mainly for coining pennies and making wire, yet these uses employ barely more than a quarter of the copper that is produced. "On second thought he might smile at naming copper coinage as an important consumer of the metal, yet his first thought would be nearer right than his second, for the Chinese Empire has used 50,000 tons of copper for making new coins, within the past two years, thereby increasing the circulating medium of the country to the extent of four ounces for each inhabitant—for while 50,000 tons of copper is a large quantity of metal, sufficient to load 1,000 freight cars of the heaviest type used on American railroads, it is but a quarter of an avoirdupois pound per capita, when divided between 400,000,000 people."

Only the expert, or those engaged most actively in the copper industry, have the slightest idea of the diversified uses to which copper is put, as shown in "The Copper Handbook," by Horace J. Stevens. According to this book, copper enters into almost every form of human activity, and the multiplicity of its uses is most surprising. Electric light, power and traction are immense consumers of the metal in the form of wire, and telephones and telegraphs find it indispensable, yet electricity rquires only a trifle more than a quarter of the metal made. The engineering trades consume more than half of all the copper produced, mainly in the form of brass, but there are about a score of friction metals and alloys, each having its specific use, into which copper enters as a component part.

The building trades are enormous consumers of copper, and this sort of consumption is increasing rapidly. Copper roofs, cornices and fronts adorn the exteriors of business buildings in thousands of towns, while for interior work the great majority of modern buildings use copper, brass or bronze locks, knobs and butts. Brass pipes, nickeled, are in modern bathrooms and lavatories, and brass and bronze chandeliers, gas and electric fixtures are almost invariable. A dozen or more other very common domestic uses of copper are mentioned. In the manufacturing world the uses of copper and brass are innumerable. One big watch concern buys copper in ten-ton lots, monthly, solely for the making of watch dials, all of the better-grade dials being of copper, enameled. The common pin requires hundreds of tons of copper yearly, insignificant as a single pin may seem. Bals for shoes and tips for shoe laces require metal by the scores of tons, and the thin metallic tips on rubber-tipped lead-pencils are responsible for a surprising depletion in the stock of the metal.

In addition to the consumption of the metal itself, tens of thousands of tons of copper sulphate are required for the arts and manufactures, and for horticultural purposes, in spraying fruit trees, bushes and vines.

In view of these facts small wonder that the big copper companies pay such fat dividends and their stock is quoted so high.

BALLAD OF THE TELEPHONE.

When the days grow dark and chilly, and the fire is burning low,
And your thoughts are turning sadly to the times of long ago;
When you say: "The world's no wiser now, although 'tis older grown;"
Comes a gentle contradiction, ringing from the telephone:

"Here's the wand of the Enchanter changing all the gray to gold,
Here's the way to pleasant firesides when the weather's bleak and cold.
Here's the link that binds you always to the life that stirs outside—
To your fellow men and women on the restless human tide.

"Be your dwelling in the city, on the farm, or at the shore,
Here's the chord of public interests ever throbbing at your door;
And the voices of your friends are talking opera and law,
Money-market, matrimony, medicine—and Bernard Shaw;

"The latest word in politics—the war a nation grieves
The time that steamer's coming in—the proper thing in sleeves,
The victory at football—and the damage at the fire—
All of this comes humming towards you on my little wizard wire."

So, when you're depressed in spirits and inclined to rail at Fate,
Just reflect upon your mercies, as recorded up to date;
For there's nobody an exile, and there's nobody alone,
In the days of modern magic and the modern telephone!

—Louise M. Jenks, in New England Telephone Topics.

SYRACUSE INDEPENDENT COMPANY

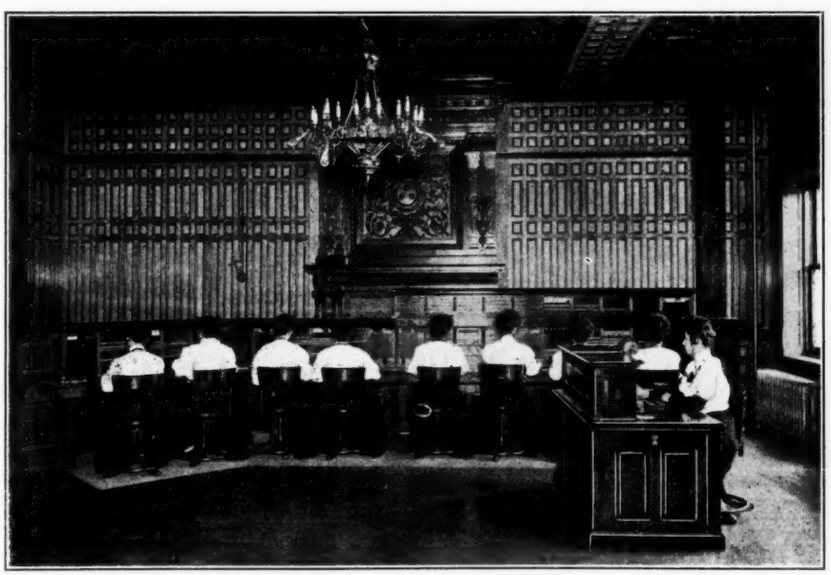
Interesting History of Exchange Which Entertained the New York Telephone Convention Sept. 25

By H. C. Slemin

THE New York State Independent Telephone Association held its annual convention this year at Syracuse, N. Y., which fact attracts attention to the Independent company operating in that city, especially as the sessions of the gathering were held in the building occupied by that company. The convention met September 25 and proved to be of great importance to the Independent telephone men of the empire state. Not only the unique history of the Independent Telephone Building, which is the home of the Syracuse company, but the luxurious fittings and complete and modern equipment of the exchange aroused remarkable interest among those who attended the convention.

Independent Telephone Company building, Syracuse, N. Y.

The organization and development of the Independent Telephone Company of Syracuse dates back to the spring of 1905, when several prominent citizens of that city began to take a keen interest in the subject of telephony. After associating themselves with a number of Rochester capitalists, who had a good deal of experience in the Independent development, they organized the Independent Telephone Company of Syracuse with a capital of $1,000,000. This company acquired all the rights and property of every kind of the old Syracuse Telephone Company, the Columbia Long Distance Telephone Company and the People's Subway Company, which began the development of Independent telephony in Syracuse in 1899.



Toll board equipment.

The plants of these three companies were in poor condition, and inadequate, in many respects, to take care of the increasing business demanding more efficient service, and the principal reason for the purchase of them was to enable the new company to equip and extend its system to the proportions and efficiency of the neighboring exchanges at Rochester, Buffalo and Utica. From the beginning, the new enterprise was well received by the public, and the company commenced operations with a large number of local subscribers in the business and residential sections, and also gave long distance and some toll service. Syracuse has become a most important terminal point for the entire state of New York and part of Pennsylvania, and has connected the eastern and western localities that before had remained separated until its toll lines were in service.

The Independent Telephone Company of Syracuse purchased and remodeled for occupancy for commercial purposes, the building which the late eccentric millionaire, D. Edgar Crouse, constructed for a private club house and stable, at an expense estimated at $400,000. The new exchange is probably without a peer in the world in the luxuriousness of its appointments. No other telephone company can boast of solid silver door knobs, of cut glass chandeliers and mahogany mantels in the telephone girls' recreation room, of offices of the traffic manager and general manager with walls and ceiling of carved rosewood with a piano finish, of a directors' room with a massive mahogany hand-carved mantel, with paneled walls and ceiling of the same wood elaborately carved. The telephone company, of course, made several changes in and about the building to adapt the structure to its service. A large addition was built on the rear, the second story being extended upward, doubling the floor space on the third floor, which has been transformed into one large and well lighted apartment where the 12,600 central energy multiple switchboard, manufactured by the Stromberg - Carlson Telephone Company of Rochester, New York, is installed.

The toll board is located in the old billiard room, where are to be seen elaborately carved representations of billiard balls and cues, which form a centerpiece over the mantel. The room is finished in mahogany, birdseye maple and white locust. The floor is a pattern one, of mahogany and oak combined. The chief feature of the decoration in the dining room, which is now maintained for the operators, is a massive cut glass chandelier which is put together without the use of any metal. The gas which

supplies the numerous burners passes through hollow pieces of glass, which figure in the decorative features of the chandelier, no metal pipes being used.

The main exchange room, which occupies the third floor of the building, has 5,000 square feet of floor space and is lighted by numerous windows on three sides. The steel ceiling and the walls have been enameled white, which enhances the light effect. Dark green trimmings relieve the monotony of the vast expense of white. In the eastern half of this apartment the switchboard is installed, which is the latest lamp line signal, relay multiple, central energy switchboard of 12,600 lines frame capacity, equipped for the present operation of: One incoming trunk operator's equipment, 6,000 central energy subscriber line equipments, fifty local operators' equipments and forty local outgoing trunks. This equipment is distributed in fifty-one operators' equipped positions, including a trunk position, assigning 120 central energy subscribers' lines to each regular operator's position. The main switchboard consists of eighteen sections, of three operators' positions each, of the nine-panel type in the multiple, trunk and answering space, and the arrangement is such that the first position of the first section shall be a multiple annex position, while the second and third positions of this same section are arranged as an incoming trunk position. All of the positions of the sixteen sections and the first and second positions of the eighteenth section are wired and equipped complete for 120 lamp line equipments, making a total suitable for the present operation of 6,000 central energy lines. The third position of the last section is also equipped as a multiple annex position.

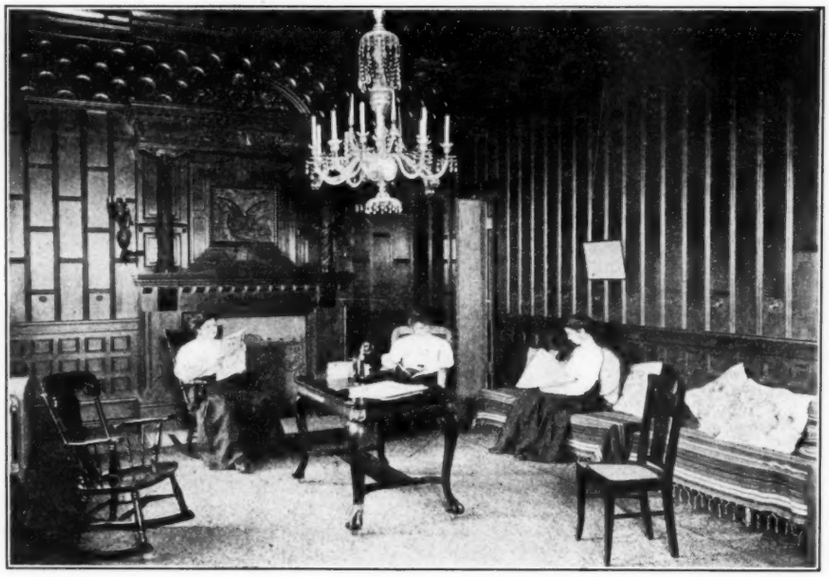
Operating room of main exchange.

The multiple jacks for a capacity of 12,600 lines are arranged in each section of three operators' positions, distributed in nine panels. The space immediately below the multiple jacks is provided for installing the outgoing trunk jacks in strips of twenty, of a capacity for 360 lines. Below the trunk line space are mounted the lamp line signals and answering jacks in strips of ten, providing for an ultimate of 150 lines in each operator's position with 120 equipped at the present time.

The switchboard contains 108,000 multiple spring jacks distributed in eighteen sections, all connected in multiple throughout the switchboard and with the corresponding answering jacks—6,000 being multiplied in each of the eighteen sections. The jacks are mounted in strips of twenty, and have a German silver thimble and individual springs for both tip and sleeve side of each line. The answering jacks are of corresponding design, mounted in connection with the lamp line signals of one-third candle power, and numbered by means of removable lamp caps associated with the answering jacks. Individual transparencies bearing the number of the subscriber's line are furnished with the lamp jacks. Of the rest of the equipment much more could be said if space permitted. In each regular operator's position there are fifteen pairs of cords, with double lamp supervisory signals wired so that one lamp indicates when a called subscriber has "hung up" and the other when a subscriber is "waiting" or when both have "hung up"; also a new type vertical cam ringing and listening keys, associated apparatus, operator's breast-plate equipment, five order wire keys and pilot equipment.

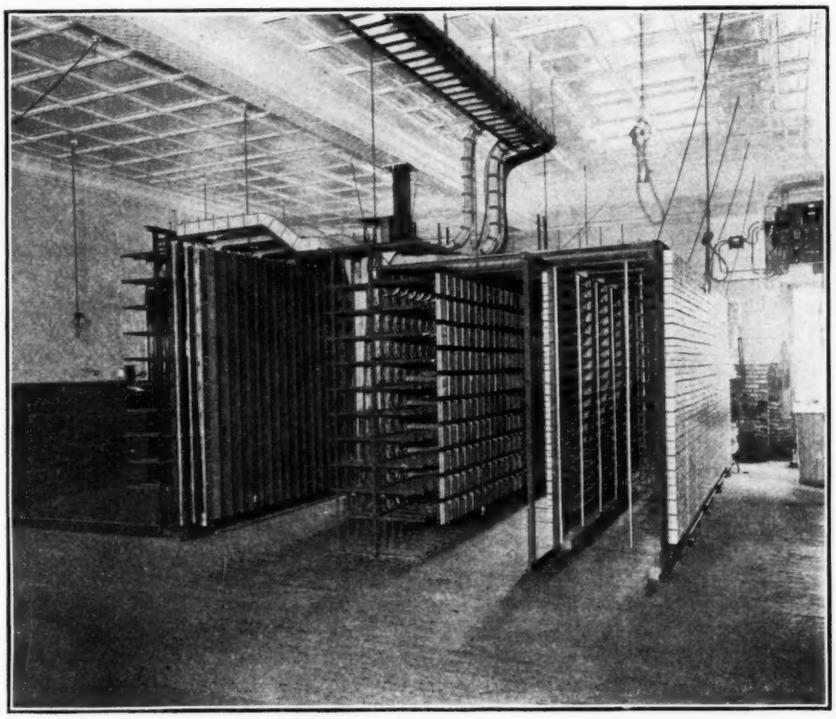
All cables used in this switchboard are made of No. 24 B & S gauge, tinned annealed copper wire, 98 per cent pure, covered with two layers of silk and one of cotton, the outside layer of cotton being colored in accordance with a predetermined color code to facilitate rapid handling and testing of the lines. The dye in these cables is such that it will not impair the insulation of the wires and was prepared and mixed in accordance with the formulas of the Stromberg-Carlson Telephone Manufacturing Company. The terminal equipment is located on the second floor, in the rear of the building, and consists of a 6,400 capacity construction main, intermediate and relay frame; main frame equipped with 6,100 pairs of Cook's protectors.

The two-position wire chief's desk and power equipment, consisting of duplicate set Holtzer-Cabot current motor generator to operate on direct current power circuit, a ringing dynamotor to operate on 40-volt storage battery, and two busy-back and howler attachments are also in the same room. Off the terminal room is a well ventilated storage battery room containing a duplicate set of twenty cells type G-27 Electric Storage Battery Company's accumulators equipped with G-15 elements. The equipment also maintains a two-position monitor's desk and a single position chief operator's desk.



Operators' retiring room.

The new company has built twenty-five miles of new underground construction in addition to four miles that was originally installed in the old subway. This construction required 800,000 duct feet of vitrified clay multiple duct conduit, which is encased in porcelain cement concrete of three inches on all sides. The manholes are of oblong shape and entirely concrete. The cable distribution throughout the business section within a radius of one mile of the exchange is entirely underground, consisting of 300 pair double wrapped paper lead cable of No. 22 B. & S. gauge copper, with an electrostatic capacity of .10 m. f. per mile and No. 20 B. & S. gauge is used for lines extending beyond the mile radius.



Terminal room.

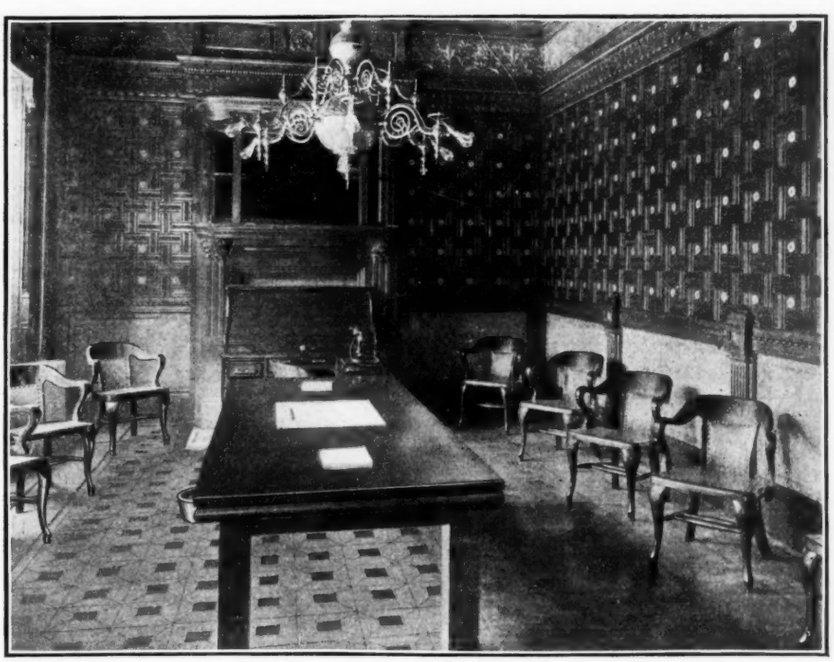
In this section laterals are run from manholes in each block to the basements of the buildings, which does away with the unsightly distribution of poles. The economical advantages of an all cable plant are admirably demonstrated in the residential section of Syracuse, where no cross-arms or open wire construction appear. The cables are opened every third or fourth pole into 10-pair terminal boxes and run from there with service wires to the houses. The maintenance of this type of construction is considerably lower than open wire and cross-arm construction, more liable to destruction by storms.

The toll line service has been an important branch of the new company's business since the construction of its several long lines in different directions, connecting with other companies operating in the states of New York and Pennsylvania. These lines are of standard construction, using 30-foot poles and No. 10 B. & S. gauge copper wires. Building sixty miles south to Lisle, where connection is made with the York State Telephone Company, of Binghamton, toll lines, the company has an outlet to the southern part of the state and Pennsylvania. A similar line has been built east to Vernon, connecting with the Utica Home Telephone Company, giving service through to Albany and eastern parts of the state. The northern section of the state is reached through a new toll line built forty-five miles to Pulaski, connecting with the lines of the Black River Telephone Company to Champlain, Watertown and other northern points. West to Elbridge, sixteen miles, a line was extended to connect with the Auburn Telephone Company, of Auburn, and the toll line system of the Inter-Ocean Telephone Company of Buffalo, permitting good service.

Throughout Oneida county several small exchanges and farmers' lines have been installed, connecting with the main exchange in Syracuse, some of which are at Tully, East Syracuse, Liverpool and Camillus.

The officers and directors of the new Independent Telephone Company of Syracuse are as follows: President, Hendrick S. Holden; vice-president, George R. Fuller; secretary, Alexander H. Cowie; treasurer, Albert K. Hiscock; general manager, John B. Pierce; directors, Hendrick S. Holden, George R. Fuller, Alexander H. Cowie, Albert K. Hiscock, Jacob Amos, Gates Thalheimer, John J. Cummins, Thomas W. Finucane, Frederick W. Zoller, Carl F. Lomb and Charles M. Warner.

The Independent Telephone Company of Syracuse has advanced the Independent cause to a great extent in New York state by the efficient service it has given its patrons. In all of the towns and cities where it operates exchanges the company has catered to the telephone using public and demonstrated to a gratifying degree what the people may expect from a well-managed, adequately-equipped concern. In its local as well as its toll line business the Syracuse company is steadily making strides in advance, and its prospects for still greater success are most flattering.



Interior directors' room.

DECISIONS AFFECTING TELEPHONY

By Gilbert W. Hand

SETTLEMENT FROM ELECTRIC COMPANY BARRED ACTION AGAINST TELEPHONE COMPANY FOR SAME INJURIES.

IN A RECENT Iowa case the administratrix of the estate of J. A. Snyder brought suit against the Mutual Telephone Company in Polk county for alleged negligence causing the death of Snyder. It is unnecessary to state the facts upon which the action was founded, other than to say that Snyder met his death while in the employ of the Des Moines Edison Electric Light Company as a lineman at work in repairing a fuse box on a pole on which wires of the telephone company and those of the light company were strung. No one saw Snyder when he received the shock which caused his death, and the fact was not observed for some minutes afterward. The administratrix negotiated a settlement with the light company for damages, amounting to over $1,200, and later brought the above action against the telephone company for further compensation. A recovery was obtained in the trial court but on appeal this judgment was set aside on the ground that, inasmuch as there had been one settlement for the alleged cause of action, the administratrix could not again recover from anyone. The plaintiff in the suit endeavored to show that she did not, by her settlement, intend to release the telephone company, but the court said that she—having signed a receipt reading "in full payment, settlement and satisfaction of any and all claims and demands of the undersigned . . . on account of the death of J. A. Snyder"—could not maintain the suit against the telephone corporation. The court said: "As we have seen, it is entirely immaterial that the one from whom satisfaction was demanded and received was not liable for the entire damage. . . . A satisfaction by whomsoever made, if accepted as such, is a bar to further proceedings on the same cause of action." The court further said that her mere desire that the defendant in this suit should not be released in the light company settlement, or the belief on her part that such settlement would not have the legal effect of releasing the telephone company, did not change the legal result of the settlement actually made.

Snyder v. Mutual Telephone Company, 112 N. W. 776.

CONTRACT GIVING COMPANY EXCLUSIVE RIGHT TO PLACE TELEPHONES IN A CERTAIN PUBLIC PLACE HELD VOID.

A case from the court of Onondaga county, New York, recently decided, contains, so far as the writer's information goes, the first general discussion of the proposition involved in the above statement. August 18, 1902, the Central New York Telephone & Telegraph Company, a New York corporation, entered into an agreement with the proprietors of the Yates Hotel of the city of Syracuse by which it was agreed that the company install a telephone exchange throughout the hotel, connect with the company's lines, and in consideration for such service to the hotel, the latter agreed to allow the company to place certain booths in and about the building for public use. A part of the agreement was that the hotel proprietors should not allow other telephone companies to place telephones in its hotel. The above court said in deciding the matter, in part as follows: "Such guidance as may be obtained from the reported cases must be had from these decisions (monopoly cases). They do little more, however, than enforce the doctrine that contracts in restraint of trade by which the public are injured are void, whether made by a corporation, public or private, possessed or not possessed of the rights of eminent domain, and that, under the circumstances of those particular cases the public was or was not injured. That, therefore, is the question to be decided in the case at bar: Is the agreement shutting out a competing telephone company from the Yates Hotel injurious to the public? On the whole I think that it is. The matter is one where much can be said upon both sides. No conclusive reasons can be given. Its decision will depend more upon the prepossessions of the court before whom it comes, more upon its theories of politics and philosophy, than upon arguments. . . . But the general tendency seems to be to encourage competition—to believe that on the whole the public welfare is promoted by its extension and injured by its restraint. Telephonic communication has become a necessity in commerce and in business, and while there are disadvantages in two systems in one territory, a monopoly of such a common necessity, with the lessened incentive to good service and the best equipment which follows, is a greater evil. And yet, if this contract is valid, if the plaintiff may take the further step of agreeing with all its patrons for an adequate consideration to use its instruments exclusively, a telephone corporation already occupying the ground may easily put itself beyond the reach of competition. True, it may be said . . . that as long as prices are reasonable no objection can be made. This may be so with reference to such business as the ocean transportation of freight. But it does not hold with regard to a business which enters so intimately into the daily life of the people. Price is not the controlling factor. Prompt, efficient and courteous service; the best available materials and instruments; the adoption of the latest devices—all are equally as important. And to secure these desiderata actual competition or the threat of competition is the most effective means. . . . Every contract, the direct effect of which is seriously to limit competition between railroads or telegraphs or telephones, affect the public at large."

Central New York Telephone & Telegraph Company v. Averill et al., 105 N. Y. S. 378.

COMPANY OWES SAME DUTY TO PERSONS EMPLOYED BY CONTRACTOR ENGAGED IN PAINTING ITS POLES THAT IT DOES TO ITS OWN EMPLOYES.

In an electric railway case in Minnesota the company had engaged one Moon to paint its poles and the caps at the top of them. One of the latter's employes was engaged at this work and received a shock of electricity from one of the caps which caused his death. The question was whether, as the company claimed it had previously warned the contractor of certain dangers which were said to have caused the workman's death, that the latter had fulfilled its duty and was free from liability. The court said: "Assuming that Moon was an independent contractor, it does not follow that the company is free from responsibility for its negligence. The dangerous condition was not created by the contractor, or by any of his employes. It was not in any way necessarily connected with the performance of the work of the contractor. The painting which the contractor agreed to do was to be done in places and under conditions which were safe so long as the company maintained its wires and appliances in proper condition. The danger originated when this duty was neglected. The duty to use the proper degree of care was owing directly to the deceased, and for damages resulting from a breach of such a duty the company is liable. It is not a question of the duty

which an independent contractor owed to his employes, but of the duty which the company owed to any person who was working in the vicinity of its appliances."

Smith v. Twin City Rapid Transit Company et al., 112 N. W. 1001.

COMPANY FAILED TO PROVE ITS AUTHORITY TO DO BUSINESS AND WAS DENIED RIGHT TO DEFEND SUIT.

A case arising in the Missouri courts contained the following facts: One Cartwright and others sued the Liberty Telephone Company to recover damages for injuries done their property caused by trimming their shade trees growing along the sidewalk in front of their property. The telephone company admitted the cutting but contended that such acts were necessary and were done in a careful and prudent manner and that it acted in good faith. There was no proof of the right of the company to operate a telephone system in the city of Liberty, in which the acts of cutting were done. The supreme court of the state has said: "The company contends that the owner of adjoining premises can not claim damages resulting thereto from user of street. We do not understand that the respondents controvert the rule above contended for by appellant in a proper case. Their answer to this contention is that the appellant (the company) did not allege or prove that it had any right or authority whatever to occupy the streets of Liberty for the use of its cables, or other corporate property, but contend that it is a trespasser upon the streets of that city. There is nothing in this record to show the city of Liberty ever granted the appellant a franchise or a license to conduct a telephone business in that city, or authorized it to use or occupy its streets with its poles, wires and cables. In the absence of such a showing, the appellant is in no position to contend that the uses to which it is putting the streets are consistent with the purposes for which they were acquired. The mere fact that the city has the authority to use its streets for such purpose, or that it has the power to delegate that right or privilege to others will not avail appellant, without it first shows the city has granted that right and privilege to it. If it was a trespasser in the performance of the acts complained of by the respondents, then it cannot shield or defend itself behind the plea that the city had the power to delegate that right to it. The very cases cited by appellant and relied upon as authority for cutting the trees disclose the facts that the acts complained of in those cases were expressly authorized and granted by ordinances duly enacted by the cities named therein, which is not true in this case, and for that reason they are not applicable here."

Cartwright et al. v. Liberty Telephone Company, 103 S. W. 982.

TELEPHONE CONVERSATION AS EVIDENCE—WHAT BY-STANDERS HEARD ONE OF THE PARTIES SAY ADMISSIBLE.

In an action against an electric railway company for injuries to a motorman in jumping from a car to avoid injury in a collision with another car, the conductor of the car testified that he called up the car dispatcher by telephone for instructions and received instructions which he repeated to the car dispatcher. One of the questions in issue was as to what the instructions were. The supreme court of Missouri said in deciding the question of the admissibility of the testimony of by-standers who overheard the statements of one party to the telephone conversation, as follows: "Defendant contends that such evidence was heresay, and that it should have been excluded from the jury, and claims the court erred in admitting it. We are unable to see any merit in the objection. Both plaintiff and defendant testify and admitted that Moad did call up Havens and asked for orders, and that Havens gave them to him, and that he repeated them back to Havens. Now, the plaintiff contends that the order and reply were one thing, and the defendant contends differently. We know of no other way by which that conversation which took place between them over the telephone could be proven except by the witnesses who were present at each end of the line when the conversation took place, and heard what each party said. They testified not only to the report of Moad and that he was at Morgan but they also testify that after reporting that fact, they then heard him report or state over the telephone, "30 meet 29 at Syracuse," etc., and if that was what he said, then Havens was mistaken when he testified that Moad repeated back to him that 30 should meet 29 at Morgan, or words to that effect. The words that were spoken at both ends of the line constituted the order, and what those words were it was competent to prove by the witnesses who were present at each end and heard them spoken. There was no error in the admission of that evidence."

Edge v. Southwest Missouri Electric Ry. Company, 104 S. W. 90.

TELEPHONE ABSTRACTION.

Why do people abstractedly draw pictures and scribble names and numbers while they are using the telephone? Who can answer the riddle? Near the open door of a telephone booth, says a Philadelphia exchange, the manager of the hotel was standing in conversation with an acquaintance, when he became aware of the fact that within the booth a number of sheets of loose paper and pencil were lying. With a word of apology to the other, he hastened to remove them from the shelf.

"Now, look at that, will you," he said, passing the sheets of paper to the other, who, upon examination, found them to be covered with odd drawings of an automobile, chairs, a bench, a Turkish rug, a watch, a revolver and a curling iron. Also there were a number of names and telephone numbers.

"Now, look at the walls of the booth," advised the manager.

The booth's sides were found to be covered with pretty much the same thing in pencil. The shelf also had its decorations.

"All of these things," said the manager, "were done by persons while they were waiting for the number they had called to answer. At such moments the mind seems to fly into vacancy and the hand unconsciously draws whatever may float through it at the moment. In many cases, as you may observe, people write their own names, the telephone number they are after, and also draw the article they are ordering. It is all unconscious, or a large share of it is, though some of it is due to imitation or the hypnotic suggestion set up by the presence of the handiwork of others in the booth.

"So that is the reason that I removed the paper and pencil carelessly left in the booth, for invariably when the paper is full the work overflows to the walls. There is enough of hypnotic suggestion there already."

KEYSTONE ANNUAL REPORT.

Excellent gains in gross and net earnings and surplus are shown by the Keystone Telephone Company of Philadelphia in its report for the fiscal year which ended June 30. Gross earnings aggregated $995,752, against $174,910, while expenses involved $518,691, $64,765 more than the preceding year, leaving net earnings of $477,061, or $110,145 more than those for the year ended June 30, 1906.

The charges reached $268,975, or $57,983 more than those for the previous year, leaving a surplus amounting to $208,086, or $52,162 larger than that for the preceding year. The company's reserve fund contribution amounted to $100,346, or $22,908 more than that for the preceding year, leaving a final surplus of $107,740, or $29,254 more than that at the close of the previous year.

CONSTRUCTION OF CONCRETE POLES

Details of the Making and Setting of this New Device for Supporting Telephone Wires

By E. M. Morton

SINCE the publication in the August issue of TELEPHONY of the article dealing generally with concrete telephone poles, inquiries have been received requesting more detailed information. The following facts, which, it is hoped, will prove useful to those seeking additional light on the matter, were furnished by William W. Bailey of Richmond, Ind.:

A patent has been recently granted to William M. Bailey of Richmond, Ind., covering reinforced concrete poles. After much study and a series of tests, he reports that he has demonstrated beyond all reasonable doubt that these poles will meet all requirements. Mr. Bailey's patents have been assigned to the American Concrete Pole company, of

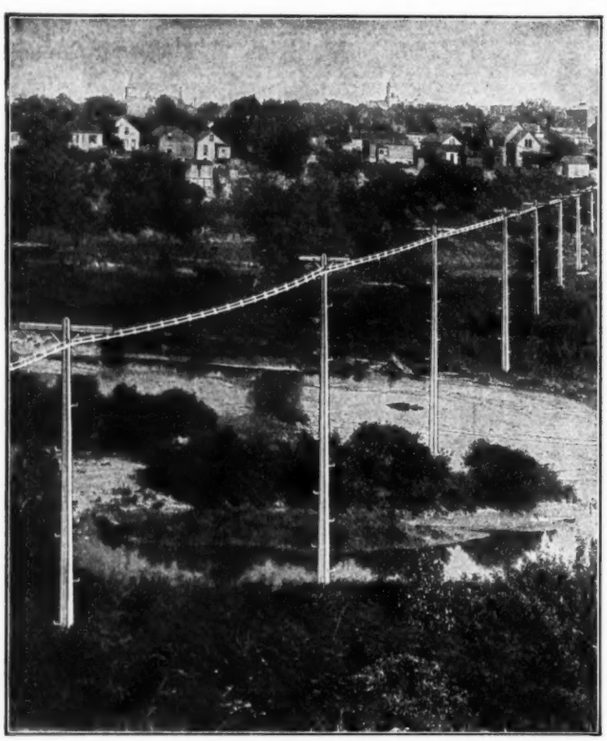


Figure 1—Concrete pole line across Whitewater River, Richmond, Ind.

Richmond, Ind., whose intentions are not only to construct concrete poles under contract, but to sell the right to construct to other companies and users on a small royalty basis or to sell the right to certain territory.

With the reinforcement of electro carbon twisted rods and spiral binding wires properly distributed in the column of cement, the poles are not only substantial and durable, but remarkable elasticity is displayed. For instance, a pole thirty feet in length will permit a deflection of thirty inches before the cement cracks. To obtain the above result would require one-third greater horizontal strain at the top than would be sufficient to destroy a cedar pole of the same dimensions. Even then the cracking of the cement does not impair the strength of the pole in the least, for after this takes place the reinforcement becomes active and takes the entire strain, and as the special rods are guaranteed to withstand a breaking strain of fifty thousand pounds per square inch, it is an easy matter to understand why this class of construction has such a degree of strength. It is surprising that it was not adopted long ago.

As will be seen by the accompanying illustrations, the poles are square, with the corners beveled off two or three inches, so that the top of the pole is octagonal in shape. This not only gives it a handsome appearance, but leaves

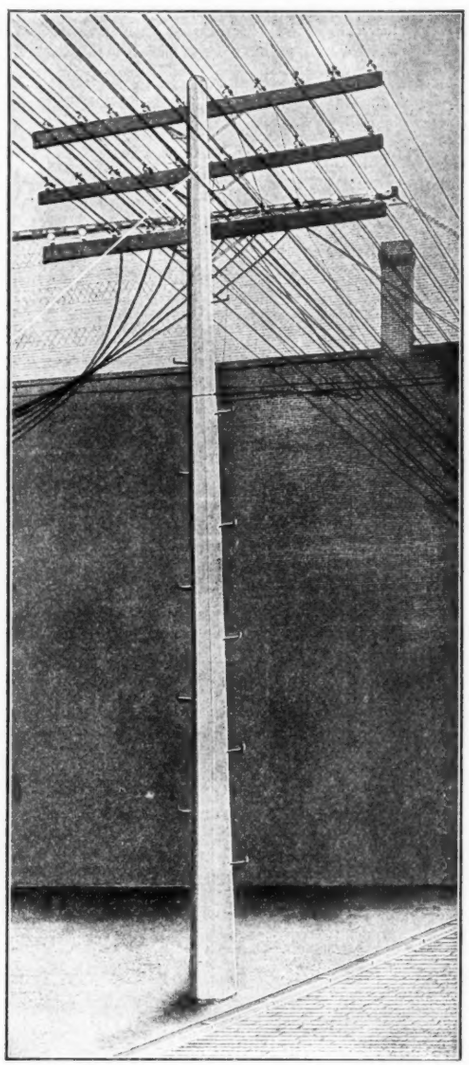


Figure 2—Concrete pole two years old.

the corners substantial and avoids a sharp edge that would be liable to chip off.

The rods are placed within three-quarters of an inch of the surface of the cement at the corners, and then bound together by a spiral wire encircling the four rods from top to bottom. This not only serves to tie the rods together, but prevents danger of the cement shearing off, as the rods have a tendency outwards when the pole is subjected to a lateral strain. Another important function performed by the spiral binding wire is that it ties the concrete together and increases the flexibility of the entire body.

The smaller poles, up to and including thirty-five feet in

height, are molded lying on the ground and after they have been seasoned are set in place by means of a gin pole. The forms are laid with the butt near the hole and the reinforcement placed. Then the concrete is poured in and allowed to remain from three to seven days, according to the weather. The forms are then removed, so that they can be used again and the pole is left to season. This process requires about three or four weeks and the poles are then ready to be set and used. All poles should be built on the ground upright in the hole or in position to be set up, thus saving the cost of hauling or unnecessary handling, as this would increase the cost.

Poles forty feet in length and larger should be built standing, as this is the most economical method. First, the hole is dug and then the form is set in place directly over it, and lined up straight and perpendicular, temporarily guyed so as to hold its position. The spiral binding wires are then put in place and the rods are drawn up on the inside of the form and set. After the reinforcement has been properly secured the side of the form that was left out to receive the steel work is put in place and the bands

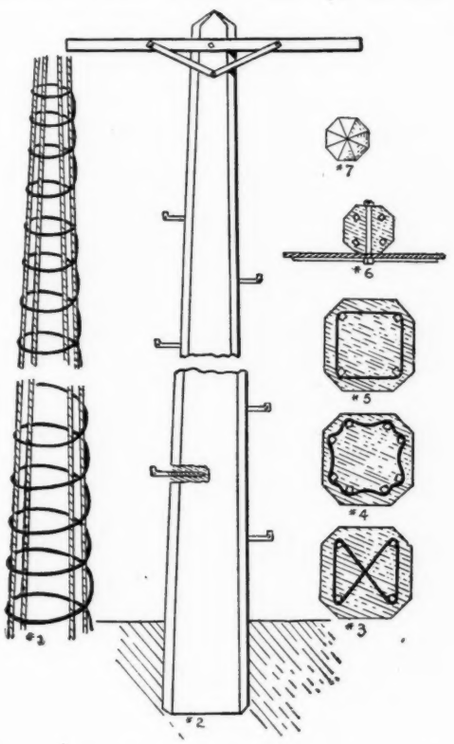


Figure 3—Detail of construction of concrete pole.

or ties around the outside secured. The equipment is then ready to receive the concrete.

There are several methods of placing this material. One is by using a large bucket with pulleys and a horse. With this method, a fifty-foot pole can be filled in about two hours, including the mixing of the concrete, but the economical plan is to have a wagon equipped for the purpose with a gasoline engine, concrete mixer and grain elevator. With this equipment, the material can be placed as rapidly as it can be mixed. The American Concrete Pole Company is now building wagons for the handling of concrete and concrete poles.

Following are a few points that are claimed by the advocates of concrete construction:

(1) The depreciation fund is relieved and can be spent for other improvements or go to pay dividends. It is said that underground construction is like diamonds. It really increases instead of decreases in value. This can also be said of concrete poles, as it is an undisputed fact that concrete improves with age. This has been most thoroughly demonstrated by the pyramids of Egypt. As the United States reports show that from $15,000,000 to $16,000,000 is being annually expended to take care of this depreciation, it is time to stop and consider how this can be avoided.

(2) Concrete poles are permanent, instead of temporary, and are not subject to destruction by birds and insects.

(3) Every pole is a lightning rod and not only protects itself from being shattered by lightning, but is a safeguard to instruments and machinery at both ends of the line, as the major portion of the lightning will be conducted to the ground through the steel reinforcement.

(4) These poles are strong, little liable to contain flaws and are not subject to decay. Therefore, the danger of valuable property being destroyed by wind, sleet and fire is materially reduced, if not wholly eliminated.

(5) One of the important points in favor of permanent cement pole construction is that it dispenses with the necessity of replacing poles. It is well known that in placing a wooden pole the cost of the pole is a small item compared to the expense of labor necessary to make the change.

(6) The cost of painting necessary in cities to beautify and preserve poles is eliminated.

(7) The concrete presents a pleasing appearance and is therefore not objectionable to city officials and the general public.

(8) Self-supporting poles can be constructed to take care of any and all strains at places where it is impossible to secure anchorage.

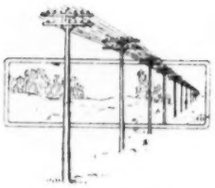
(9) The cost of dressing, framing, roofing, boring and stepping is dispensed with and pole yards are no longer necessary.

Figure 1 shows a line of poles constructed across Whitewater river at Richmond, Ind. These poles are from forty to sixty feet in length and were built in a perpendicular position. It is needless to say that this piece of work is permanent.

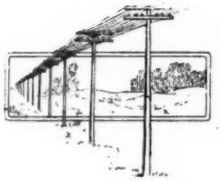
Figure 2 shows a pole in detail two years old, which has been subject to all kinds of strain.

Figure 3 shows the detail construction of pole and reinforcement, as follows: Part 1 shows the four electric carbon rods as they are placed in the cement body, with the spiral binding wires pulled in place. Part 2 shows a general view and shape of cement body as finished, the steps and other bolts and holes are very easily made while the concrete is plastic. Parts 3, 4 and 5 show cross-sections of pole with three different methods of binding, also two different methods of reinforcing. The scheme represented in Part 4 is only intended for extremely heavy construction. In Figure 3, part 6 gives the detail method of the manner of securing cross-arms. A bolt or rod is placed in the form and removed within twenty-four hours after the concrete has been placed. This becomes a clean hole through which the bolt that is intended to hold the cross-arm can be placed and the arm securely belted on. Part 7 represents the top or roof of the pole. This is easily put on after the pole is finished, but is not necessary except for appearance.

Mr. Bailey has also made application for a patent on forms varying in sections from five to fifteen feet each, and divided up so as to be easily handled. The binding wire, which is very important, after the forms are assembled and put in place, is wound in the proper shape ready to receive the rods. After the rods have been drawn in, the binding wire is stretched from bottom to top, which gives a tie around the rods about every four inches. The rods are then spread and placed, and, after the form has been secured, the concrete is poured in and allowed to harden. After three or four days the forms can be removed. The pole is then left to be seasoned and will be ready for use in about three weeks.



CONSTRUCTION AND EQUIPMENT OF TOLL LINES



By Charles H. Coar

POSSIBLY no single subject pertaining to telephony has received so much attention by telephone workers as toll lines, and it would be a difficult task to find a subject which would bear repetition as easily, for the importance of toll line connections is being more fully realized each successive year.

A telephone exchange which does not furnish toll connections to its patrons is not in a very good position to enter into competition with an exchange which does. Yet it was not so many years ago when the executives of many medium-sized exchanges throughout the country felt quite elated when communication was established with some nearby hamlet, and in many instances during these times so eager were they to establish this communication that small poles or even saplings were simply sharpened to a point and forced into the ground after the brackets or insulating fixtures were placed on them, for this class of poles was usually too small to admit of much work being done after they were in place. Then the toll circuits were composed of a single iron wire, using the earth as a return, but nevertheless, the service was considered highly satisfactory by the public, who looked upon a communication held over fifty miles of wire as astonishing.

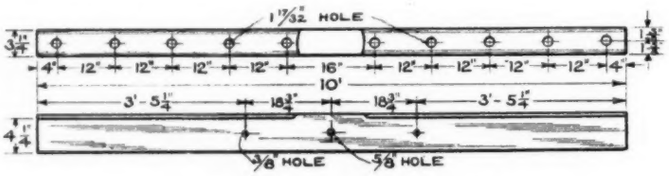


Figure 1—Ten pin cross arm details.

But there has occurred a great evolution in the construction of toll lines, as well as in other telephonic apparatus during recent years, and nowadays all well managed companies spare no expense in making their toll line construction such that the best possible service will be given.

There are forms of construction which are adopted as standards, and this article will enter into description of some of the more important methods, although that which is considered consistent with good practice in some localities may be just the reverse in others, owing to topographical or atmospherical conditions, but in summing up the country as a whole the methods will be found similar in many instances.

In surveying or staking out a course for a toll line, care should be exercised in marking the course, in order that the line will not have to undergo any great changes in its course as is often necessitated by the settlement and development of a locality. It will usually pay in the end to mark the course along with the county roads or section lines even if it necessitates considerable more expenditure in the initial cost. Toll lines which are constructed across country in the shortest possible manner are often fenced in after a few years by the persons who have acquired the land upon which the line is placed, and the consequence is that pole rent often has to be paid, and also it is sometimes a difficult matter to maintain such lines, as it is not always possible to drive a rig into such enclosures. If it is possible to obtain satisfactory arrangements with a railroad company for the privilege of placing the line on its right of way, it should be done, because the maintenance of such a line is much easier owing to the transportation facilities. Avoid swampy districts or where trees are numerous, as much as possible, unless the latter can easily be kept clear from the wires. Abrupt curves should be avoided, as well as rocky soil, such as would necessitate considerable labor in digging the holes.

The poles chosen for toll line work should be as free from knots as possible, sound and straight grained, and it is not best to use any pole twenty-five feet in length having a top diameter of less than six inches.

The poles, of course, should be seasoned, and it is a matter of good policy to paint the pole with pitch after it has been peeled or shaved, carbolineum avenarious, or any

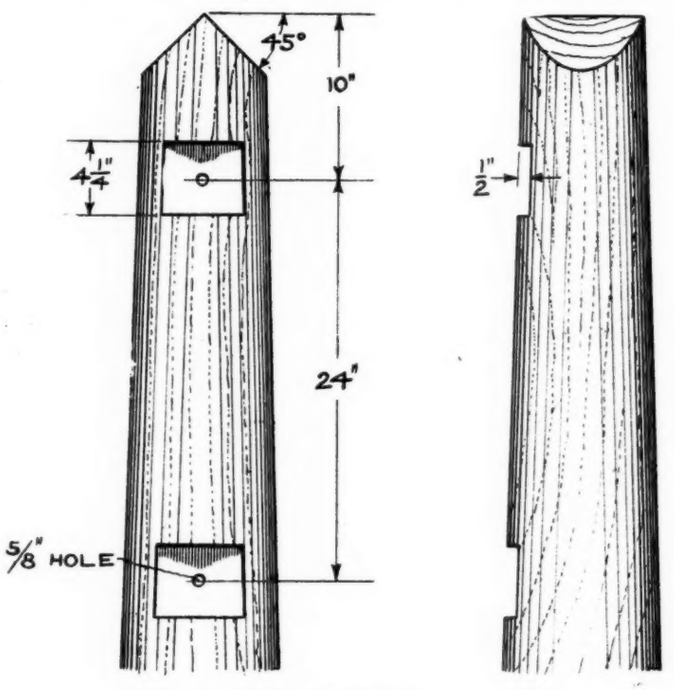


Figure 2—Details for trimming top of poles.

other good preservative for a space of four feet at the butt, so that about a half-foot of the painted portion will be above the earth's surface after the pole is set, and the roof and such gains as are not in use should be treated likewise. White cedar, chestnut and cypress poles are the more preferable to use, because poles such as tamarack, pine or spruce rot and become unfit in a comparatively short time, depending largely on the nature of the soil in which they are placed.

While a large number of poles is often required to properly build up a comparatively short distance, such as where curves exist, one may figure on alloting forty poles to the mile as a safe estimate for good construction. No poles should be used for toll line construction which are under twenty-five feet in length, and this length is often too short when the poles are set in a hilly country. When the poles are being distributed care should be exercised, that the stoutest poles be placed at such points in the lines as will be

under heavy strain, and the same care should be exercised in selecting the poles for crossings, etc.

The kind of cross arms for toll lines has been the cause of much controversy, some contending that a six-pin arm is preferable, others an eight-pin arm, and still others a ten-pin arm.

A six-pin arm would of course be preferable if one were sure of having sufficient pin capacity, for this arm would be lighter, easier placed, would cost less, as well as requiring less clearance to be maintained through such obstructions as trees. The eight-pin arm would have the

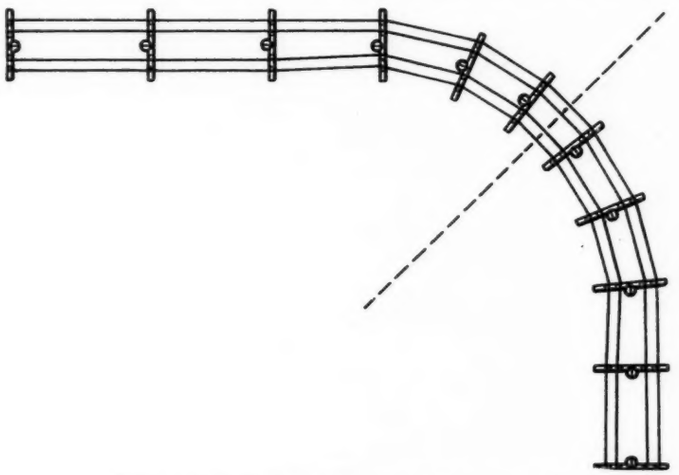


Figure 3—Method of placing cross arms on poles.

same advantages over the ten-pin arm, but nevertheless the practice in most instances now is to use ten-pin arms, such as is shown in Figure 1, principally because the patronage of toll service is rapidly increasing. Some companies prefer to shave and trim their poles at a pole yard, while others finish them after they have been distributed, which is the more preferable method if the same opportunities are afforded for doing the work, because the

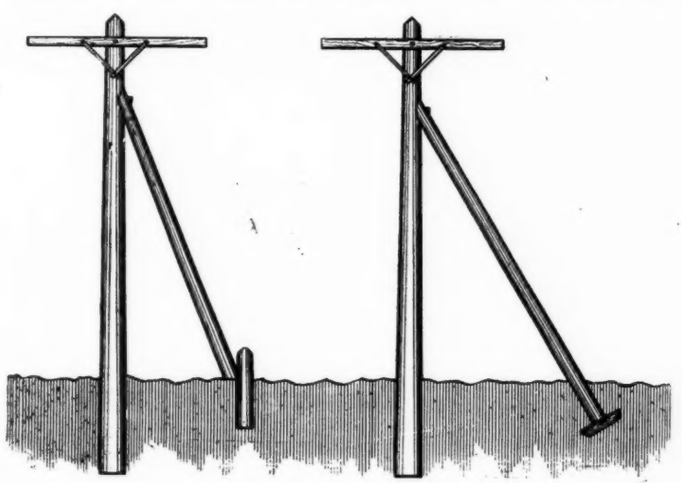


Figure 4—Bracing of poles.

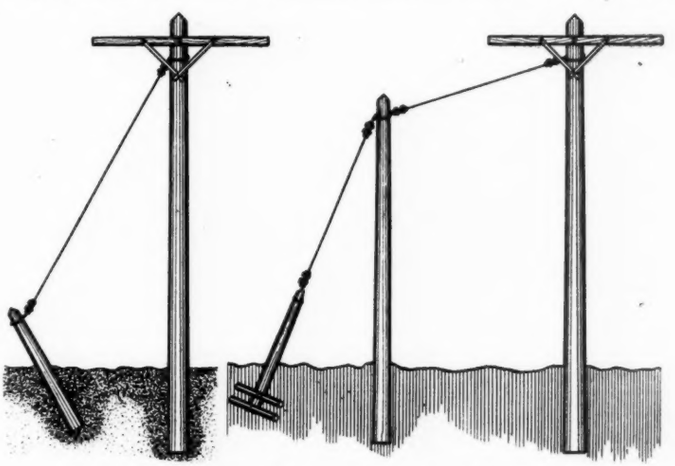
finished pole would be subjected to less handling. After the poles are shaved, the gains are cut and it is customary to cut two of them in each pole, starting with the center of the first or top gain ten inches from the top of the pole, and measuring twenty-four inches from this center to find the center of the second gain. The gains are accurately cut on the face or sweep side of the pole to a depth of at least one-half inch and to a height of four and one-quarter inches, and should be true to the axis of the pole as well as to the other gains. A five-eighths hole is then bored through the center of each gain to admit the cross arm bolt. Figure 2 illustrates this. A roof is then cut on the pole with its sides sloping at an angle of forty-five degrees, in such manner that the ridge or peak will be crosswise to the cross arms in order that the water it she 's off will not run down on the cross arms. The roof should be painted with some preservative.

The holes should best be dug at about the same rate the poles are set to avoid caving, etc., and the following table will give an idea as to the depth of the holes:

Length of Pole.	Straight Line.	Curves.	Solid Rock.
25 ft.	5 ft.	5½ ft.	3 ft.
30 ft.	5 ft.	5½ ft.	3½ ft.
35 ft.	6 ft.	6 ft.	4 ft.
40 ft.	6 ft.	6½ ft.	4 ft.
45 ft.	6 ft.	7 ft.	4½ ft.

In view of strengthening a lead it has been found good practice to place the cross arms on the alternate sides of the poles in straight stretches, and at curves to so place them that they face the center of the curve, as shown in Figure 3. If the gains are cut before the poles are set, as is customary, one should bear the above facts in mind in order that the gains will face in the proper direction before the poles have been tamped into the earth.

Possibly no part of the construction of a line is more neglected than the setting of the pole, for it is not an unusual occurrence to see poles left in holes which had merely been filled up with loose dirt. Too much attention



Figures 5 and 6—Guying poles from slugs.

cannot be given to tamping the earth firmly about the poles as it is being shoveled in. It is good policy to start refilling the holes with the finer dirt, and gradually work in the coarser and rocks as the hole is becoming filled. Bank up the earth about the pole for about a half-foot in height, for the earth around the pole settles considerably in time, and by doing this sinks are avoided. When digging holes in swampy land it often becomes necessary to block out the hole during the digging to prevent the sides from caving in. A barrel which has the ends broken out is admirably suited for this purpose, as it is very readily sunk along with the depth of the hole during digging, and after the pole has been placed in a hole so equipped, the barrel may be broken and withdrawn, after which the hole may be refilled. In swampy places one should use rocks to refill and bank up the poles if they are obtainable, as they hold the poles much firmer in this kind of soil.

Another very important feature of line construction is guying or bracing the poles, which are subjected to undue strain, and as the old method of bracing such poles by means of other poles, as shown in Figure 4, is becoming obsolete no description will be given the different forms. The principal reasons why the bracing method has fallen out of practice are that more labor is usually involved in this method, as well as poles, which are becoming scarce, and also because a lead thus braced is rather unsightly.

In making provisions for guys, three different kinds of

strain are usually considered, namely, the crushing strain, caused by the weight of the cross arms, wires and pole accessories; the side strain, due to wind pressure, etc.; and the strain ahead or back in the direction of the wires. There are other strains to be considered, but they are different in their respective conditions, and have to be treated as such.

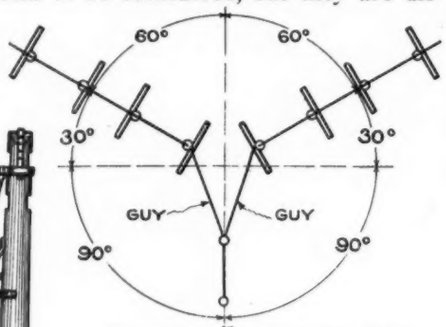


Figure 8—Proper way to relieve strain on pole.

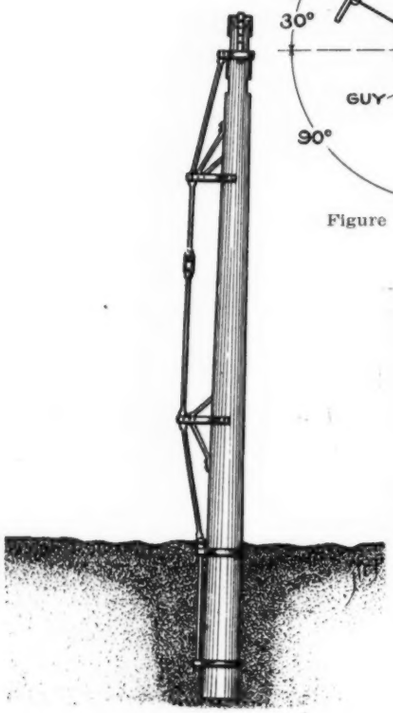


Figure 7—Pole equipped with truss rod.

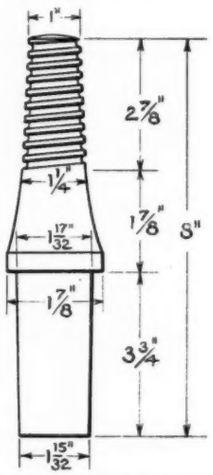
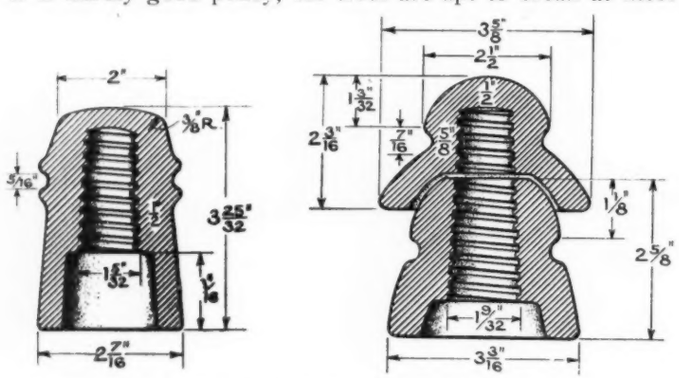


Figure 9—Standard insulator pin.

Principally for this reason when guying one should have a fairly good knowledge of mechanics, because it often becomes necessary to place guys under exacting circumstances.

Trees can often be used on which to fasten guys, but it is hardly good policy, for trees are apt to break at most any time, and furthermore they sway more or less during wind storms, which would produce a wearing effect on a lead so stayed. But of course throughout the construction of a lead one has to take into consideration the amount of expense the incoming revenue of the finished line will warrant, for it would not be very satisfactory to the stockholders to construct a costly line which would in return pay but poor dividends.



Figures 10 and 11—Standard and transposition insulators.

Omitting rocks and trees, a slug as shown in Figure 5, was very much in use, and is still considered practical. Figure 6 is a neater and more permanent slug, and the method shown is often employed when the guy wire is across a highway. All anchor logs or slugs, as shown in Figures 5 and 6, should at least be set in the earth for a depth of five feet, and it is advisable to refill these holes with rocks as much as possible.

Where it is impossible to use guy wires in connection with slugs or anchors, other means have to be adopted and for such purposes truss rods are employed very successfully, for a pole so equipped may be bent in most any shape. A pole equipped with one truss rod is shown in Figure 7.

One other important thing to be remembered in guying is to so place the guy that it will halve the strain, or in other words, place it so that the strain will be equal and proportionate on each side of it, as shown in Figure 8.

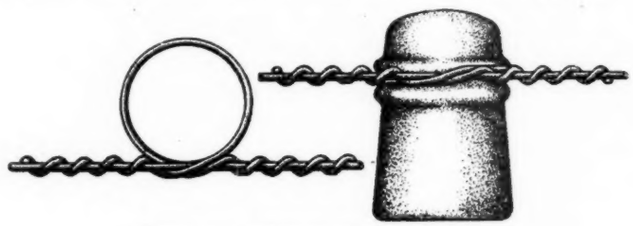


Figure 12—Tying in wire to insulator.

Now as to cross arm accessories, starting with the pin, it might be mentioned that a pin of the dimensions shown in Figure 9 is considered a standard for toll line construction, although on dead end poles or sharp curves and corners and transpositions, these pins are sometimes reinforced by extending a carriage bolt three-eighths of an inch in diameter in the center of the pin throughout the entire length. All the pins should be fastened securely into the cross arms by nails, which extend through one side of the arms and half way into the pins.

The glass insulators are a very important part of the line, and only the best should be used, for during wet weather a glass which does not sufficiently shield the pin from moisture allows some portion of the talking current to escape thus, to say nothing of the grounding or unbalancing effects.

The most approved patterns of the standard and transposition insulators are shown in Figures 10 and 11 respectively. Most insulators are moulded, because of their comparative cheapness, although glass which is blown has a much higher insulation resistance.

The cross arm braces should be constructed of galvanized strap iron about one and one-quarter inches in width and one-quarter inch in thickness by twenty-eight inches in length, and two holes should be provided in each brace for the admittance of the proper bolts by which it is fastened to the pole and cross-arm. It is usual to fasten the braces to the cross arms by a three-eighths inch carriage bolt about four inches long, and a lag bolt, commonly called in this instance the "heel bolt," one-half by five inches, is employed to fasten it to the pole. The cross arm is bolted to the pole by a five-eighths inch bolt of sufficient length to extend through the pole and cross arm.

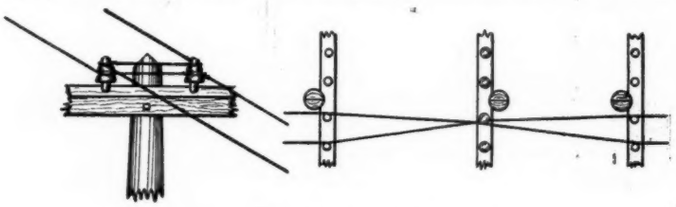


Figure 13—Method of transposing wires.

The use of iron wire for toll lines is rapidly decreasing,

although there are still to be found many short lines, up to fifty miles in length, of iron wire either in connection with the earth or metallic, and it has always been a mystery how some of these circuits work so well. At one time I had to contend with a few such circuits, which to all purposes seemed to answer just as well as did the copper circuits which were constructed some time later, but the climatic conditions were very favorable, and no doubt this aided materially. No one constructing toll circuits should consider any other than metallic circuits, unless the cheapest kind of service is desired, and it is also advisable in most instances to use copper in preference to iron. Iron wire is unsuited for a telephone line of any great length principally because of its magnetic properties, which are much greater than copper. Its resistance is also so much greater than were one to use an iron wire of sufficient size to obtain the same amount of resistance that a copper circuit would have, it would necessarily have to be so large that the strain on a lead would be excessive, and the capacity of the different circuits would be so much more increased that the talking currents would be distorted.

Iron wire, too, has the bad feature of being acted upon by the atmosphere to the extent that in a score of years, or some instances a great deal less, it becomes so impaired as to be practically useless for speech transmission, while

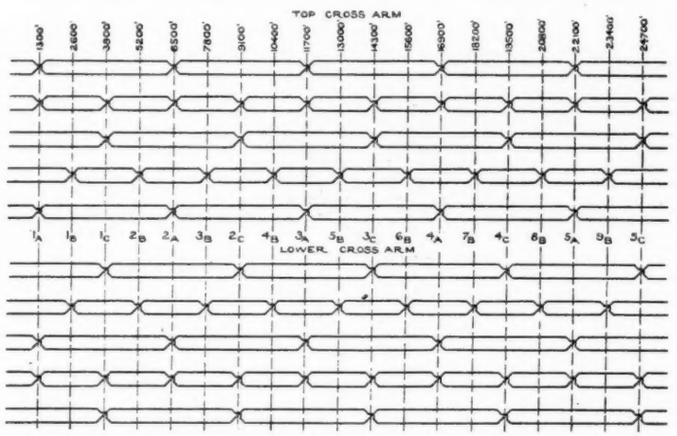


Figure 14—Transposition scheme for two cross arms.

copper is not materially affected under ordinary circumstances. Iron wire, however, is cheaper and has greater tensile strength.

Aluminum has some advantages over copper, but has not as yet been used very extensively in telephone work. It has about sixty per cent of the conductivity of copper, is a great deal lighter, and may not corrode. For example, to obtain about the same resistance in a circuit formerly composed of No. 12 B. & S. copper, one would use No. 10 B. & S. aluminum.

If aluminum were used the poles could be set considerably farther apart as compared with copper, because of the difference in the weight of the two metals, but as an aluminum wire possessing the same resistance as copper would be considerably larger, it would present more surface to wind and snow or sleet accumulations. The following comparison between aluminum and copper is approximately correct:

Kind.	B. & S. size.	Weight per 1,000 ft.	Diameter in inches.	Resistance per 1,000 ft.	Sq. ft of surface to wind per mile.
Aluminum ..	10	9.5	.102	1.6	29.9
Copper	12	20.	.08	1.6	23.8

One other kind of wire, known as the bi-metallic wire, has merits. This wire has a steel core which has a plating or covering of copper deposited on it, and the claims for this wire is based on what is known as the "skin effect." It is claimed that rapidly alternating currents travel over a wire in a sort of a whirl, and that they seek the outer surface, as though they were subjected to centrifugal force, thus leaving the center or core of the wire useless. Inasmuch as it does not tend to reduce the resistance of the wire to such currents, bi-metallic wire having a copper outer surface, with a steel core, according to theory would have the same virtual resistance to such currents as well as greater tensile strength than a wire composed entirely of copper.

The connection in all the line wires should be made with sleeves which are obtainable for the different kinds of wire.

The amount of slack or sag in span where forty poles are used to the mile differs considerably in localities, but in the eastern part of the United States it is customary to allow in copper circuits a dip in the center of the span of from three to four inches, while in the western portion of the United States a dip of eight to ten inches is allowable. Lines in the western portion usually pass through greater changes of altitude as well as temperature and consequently a greater dip is necessary. The best method of tying in the wire when copper is used is shown in Figure 12, and it might be mentioned that the tie wires should have the temper taken out of them by placing them in a fire until they become red hot, after which they may be allowed to cool slowly. This of course refers to home made ties, as the purchased ones should be perfectly pliable. The copper tie is usually sixteen or eighteen inches long. Pliers should not be used more than is absolutely necessary to aid in tying in copper, as it is a very easy matter to "burn" copper so that it will rupture and break in a very short time.

At one time it was usual to transpose lines after the slack was pulled and the wires tied in, but of late years the two forms of transposition shown in Figure 13 are very much in evidence, and are placed as the wires are being strung out by shifting the reels. It is not always possible to transpose a number of circuits by plotting these circuits out, owing to conditions along the route of the line, but a scheme for transposing two arms of wires is shown in Figure 14, along with a method of designating such transpositions. Any one wishing a good treatise on transpositions, cross talk and induction, should read Fowle's paper delivered before the telegraphers' convention at New Orleans, which was published in TELEPHONY.

INDEPENDENTS DEFEAT THE BELL.

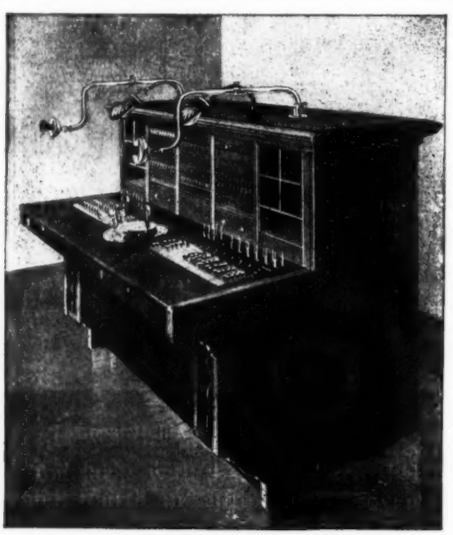
From Seattle, Wash., comes the news that a long contest between the Pacific States Telephone & Telegraph (Bell) Company and the Farmers' Telephone (Independent) Company, operating near Wenatchee, California, has just been concluded with the retreat of the Bell. The Farmers' company has been conducting a very satisfactory business and the Bell attempted to drive it from the field or absorb the system. Rates were reduced to a nominal figure with the hope of forcing the retirement of the Independents, but the farmers of the section steadily refused to waver in their support. Failing in that method, the Bell endeavored to purchase the holdings of the Farmers' company, but all offers were declined. The finish of the fight is the retirement of the Bell from the field, after disposing of its property in that vicinity to the Independent company, and an agreement to abstain from competition for ten years in the territory concerned.

J. C. Hannah, J. J. Zuccarello and thirteen other citizens of Campbellsville, Tenn., have sued the Cumberland Telephone (Bell) company for $28.000 damages alleged to be due because of the failure of the defendant company to maintain an exchange at Campbellsville as per alleged contract.

MANUFACTURERS DEPARTMENT

DEAN SWITCHBOARD WITH NON-MULTIPLE CIRCUIT.

The demand for a common battery switchboard of but comparatively small capacity, to include adequate toll facilities conveniently located, has been met by the Dean Electric Company, Elyria, O., who equip standard toll section with four hundred non-multiple circuits, as shown in the accompanying illustration, and add in the center panel a



Dean switchboard at Racine, Wis.

bank of fifty toll jacks with a separate key shelf. Each of the first, second, fourth and fifth panels provides space for one hundred common battery lines with eight-cord circuits and keys mounted in front of each panel.

This style of board was originally designed to meet the requirements of the Grafton, West Virginia, exchange of the Consolidated Telephone Company, and it has proven so satisfactory in service that the Dean Electric Company is standardizing the type. While the same cabinet has been used in many instances as a standard toll section, the arrangement of equipment as outlined above is comparatively a new departure.

Dean switchboard with toll facilities.

The smaller illustration herewith shows the same style of cabinet equipped as toll section for the Citizens' Telephone Company of Racine, Wisconsin, and installed some two years ago. Remove from this board the book stalls and pigeon holes on either side, both above and below the key shelf, substitute toll key and cord panels in the place of the calculagraph and you have the new, common battery type. This new style may be enlarged by removing the end boards, installing adjoining sections and re-wiring for multiple circuits, since it is provided with multiple cable supports. This great flexibility in service and in providing for future needs is an advantage most readily appreciated.

TELEPHONE WIRE VS. FENCE WIRE.

There is a manifest tendency on the part of some of the smaller telephone companies, who hope thereby to economize, to use single galvanized fence wire. They should remember that fence wire is high in resistance and impairs the service of telephones. Besides, it is hard, short-lived and in reality is more expensive than the high grade telephone wire, which is low in resistance, doubled galvanized and will last several times as long as fence wire, giving perfect satisfaction for years to come.

Above and other very important facts are embodied in a letter and printed matter recently issued to the trade by the Indiana Steel & Wire Company, of Muncie, Ind., who make a very excellent telephone wire. Through the merit of its product, its excellent business management and its popular sales department, chief of which is the only "Bob" Miller, this concern has built up a magnificent and growing patronage in the telephone field.

For the protection and satisfaction of its customers the

Indiana Steel & Wire Company has had a number of scientific tests made by the leading institutions of technology, and in each instance, it is said to have developed that, in addition to having all the necessary qualities, its wire has greater strength, is much tougher, and has less resistance than required by standard tables. The concern guarantees its wire to be standard, to withstand every test and to be the equal of any telephone wire on the market. It also guarantees same to please the purchaser and writes its customers to reject or refuse any wire not satisfactory in every way. Here is a test which the Indiana Steel & Wire Company suggests telephone companies employing in order to see if the wire they buy is telephone wire or fence wire:

"Prepare solution by dissolving five ounces of commercial copper sulphate crystals, "Blue Stone, Blue Vitrol," in fourteen ounces of water. The solution should be used for testing when its temperature is about 68 degrees. Telephone wire must be well galvanized and capable of standing the following: The wire will be plunged into the solution and permitted to remain one minute, then remove and wipe clean. Perform this process four times. If the wire appears black after the fourth immersion it shows that the zinc has not been removed and the galvanizing is well done. If it has a copper color, the iron is exposed, showing the zinc is too thin. The corrosion on the wire, when taken from the solution, is of a copper color, but this is to be wiped off clean and the decision rendered on the appearance of the clean wire."

AN ATTRACTIVE BUSINESS OPPORTUNITY.

The American Clock Company, Chicago, one of the best-known concerns in the United States, is preparing to greatly increase its plant and equipment in order to keep pace with the great growth of demand for its goods.

H. O. Jackson.
President,
American Clock Co.

Finding that the company's synchronous time system for telephone companies has elready made a big hit in this field and assuming very naturally that telephone men will be further interested in regard to the company's financial plans, President H. O. Jackson submits a business-like presentation of the same on page 83 of this issue. Mr. Jackson also has prepared an attractive booklet on the subject which he wishes every telephone man to have. In this, he says:

The American Clock Company is the largest maker of electric time stamps, time recording systems, telephone synchronous time systems and secondary clock systems in the country. Its products are known and used the world over, and have taken the highest honors at international expositions in this country and abroad.

American electric clocks and time systems are recognized everywhere as standard, and as they are fully protected by basic patents the company has a practical monopoly.

Among the users of its goods are the United States government, banks, hotels, railroads, state institutions, city retail commercial houses, telephone companies and hundreds of large public and private concerns which regard our goods as business necesstiies as indispensable as the typewriter or telephone.

The business has grown so rapidly that with the company's present capacity it is impossible to supply the practically unlimited demand for its goods. During the past twelve months its books show an actual increase in orders of over 200 per cent. It is now merely a matter of getting ready as quickly as possible to fill the enormous waiting demand.

The company has a model plant splendidly adapted to its purposes, equipped in every department with special tools and machinery. The main buildings have about 80,000 feet of floor space, with ample ground adjoining for building purposes. It also has a permanent force of high-grade men, superintendents, foremen and mechanical experts, who have been specially trained in the business and are capable of handling a big force of workmen.

What is needed now, in order to reach the wonderfully rich profits that are anticipated, is an immediate increase of 400 to 500 men in the various departments. This means a considerable cash outlay in the company's payrolls. To provide for it, without curtailing its resources in the purchase of raw materials, etc., it has been decided to issue a limited amount of 8 per cent preferred stock, which will be a first lien on all the assets, and should pay yearly profits of from 50 to 100 per cent.

Mr. Jackson says: "I have no salesmen, no agents, no middlemen of any kind. You simply send for the book, read it quietly in your own home, and after carefully considering the facts, make up your mind for or against taking an interest in the American Clock Company's great and growing business.

"If you decide to come in with us, please remember this: You will be dealing direct with the company, whose standing, credit and absolute responsibility can easily be determined by referring to Dun's, Bradstreet's, any express company, or any of the big business concerns in Chicago.

"Not a single dollar of stock subscriptions will go to 'promoters.' Not one dollar will be misapplied. Each shareholder will get a 'square deal.' His interests will be fully protected, whether his holdings be large or small. The entire enterprise will be managed, as it always has been managed, on straightforward business principles, strictly in the interests of those who own the stock."

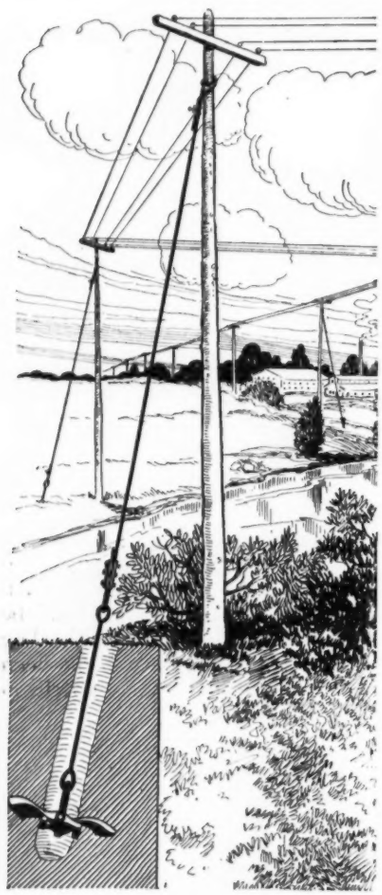
Anyone at all conversant with the enormous profits derived by telegraph companies from their synchronizing business, will appreciate the great possibilities of the American Clock Company's system for telephone companies. All the more important does this appear when one stops to consider the fact that more and more each year telephone companies are coming to earn their choicest dividends from by-products such as this. Briefly, the American Clock Company's system comprises any number of independent self-winding electric clocks, with patented synchronizing attachment, located in residences or offices and connected with the telephone wires. These clocks are automatically synchronized once every twenty-four hours by an electric self-winding master clock located at the central station. It takes but little additional wiring in residences and public offices to make the necessary connections for synchronizing the clocks.

The master clock automatically cuts the telephones out of service, throws in the clock system, and synchronizes all the clocks on the line. The clocks are then automatically cut out of the circuit and the telephone service restored. The synchronizing operation consumes but two minutes of time of the telephone wires, and could be arranged to occur at, say, two minutes before 3 o'clock a. m., or any desired time, when the telephones are used the least.

After the installation of this time system in connection with one's telephones, the cost of maintenance will be but a fraction more than for the maintenance of the telephone system alone. It is claimed that there is nothing intricate about this time system. Each clock is a perfect timepiece, automatically self-winding, dependent entirely upon its own resources for operation. Only two minutes out of twenty-four hours has it any connection whatever with the telephone system. Any line man, it is said, can install and maintain the system.

THE "JACK" ANCHOR.

New ideas in land anchors have been so prolific and varied that an announcement of a "new anchor" has come to be regarded almost as a stock joke. But the construction man who has labored for hours trying to set some of them and the exchange manager who has paid dearly for anchors that looked good in the advertisement but did not hold in the earth, know that some of these jokes are sad ones.



Anchors have come and gone as rapidly and as frequently as the seasons. Some have been good and are still doing their work but the great majority have been consigned to "innocuous desuetude," meaning, in this case the junk heap.

The Durant Electric Supplies Company, 58 Fifth avenue, Chicago, in introducing the "Jack" anchor, disclaims all intention of perpetuating one of the time-honored jests and insists that it is most serious in recommending the "Jack" anchor as one that is the easiest to install and the hardest to pull up. The company also claims that no expensive, clumsy setting contrivances are necessary with the "Jack." The "book of instructions" consists of one sentence, "Bore a hole and drop in a 'Jack' anchor; that's all." Also, it is claimed that "if a pole is hitched to a 'Jack' anchor it'll stay hitched."

The "Jack" anchor is made in several sizes, depending on the strain to which the anchor will be subjected. It is largely used for fence posts, telegraph and telephone poles, electric light and railway poles, derricks, smokestacks, etc. For special construction work, special sizes are made to order.

The Durant Electric Supplies Company states that the prices of the various sizes of anchor are very low and that it can make immediate shipments—sometimes an exceedingly important point when construction work is being held up.

MORE ORDERS FOR DEAN GOODS.

Orders for switchboards have lately been obtained by the Dean Electric Company, Elyria, Ohio, from companies operating in the following cities: Glouster, Liverpool, Grafton, Wellington, Chardon and Medina, Ohio; Russell, Omemee and Overly, North Dakota; United Gas and Improvement Company, Philadelphia; Plattsburg, Missouri; Chester, New York; Hubbard City and Whitesboro, Texas; Valina and Saginaw, Mich.; Maynard and Sandstone, Minn.; Vandalia and Newton, Ill.; Anita and Belle Plaine, Iowa; Union Grove, Wisconsin; Osawatomie, Kansas; Sedro-Woolley, Washington; Kearney, Neb.; Madison, Ind.

Dean harmonic converters have been added to previous installations at Norfolk, Virginia; Hastings, Minn.; Byesville, Ohio; Mandan, North Dakota; Troy and Lansingburg, New York; and miscellaneous orders for subscriber's station equipment, etc., have been received from Levis, Quebec, Canada; Kingsville, Texas; Grand Rapids, Michigan; Everett, Washington; and Wakefield, England.

THESE WON TELEPHONES.

The Chicago Telephone Supply Company of Elkhart, Ind., received seven correct answers in the guessing contest advertised in the August issue of TELEPHONY and has sent one of its De Luxe telephones to each of the following parties:

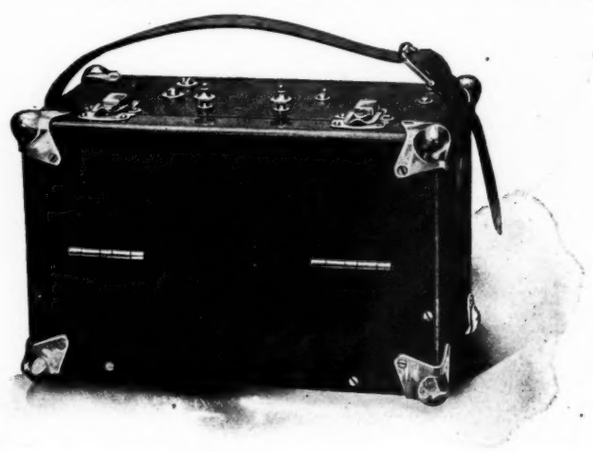
Vernon W. Robinson, Winchester, Ind.
E. A. LeVan Marshalltown, Ia.
Harry L. Bailey, Warrensburg, Mo.
George H. Glass, Pekin, Ills.
Elmer Koontz, Walkerton, Ind.
H. H. Brall, Davenport, Ia.

The seventh correct list did not give the addresses of the contestant and his identity remains a mystery. Following are the names of the Chicago telephone men whose pictures were presented on page three of the August TELEPHONY, commencing at the top and reading from left to right:

E. R. Harding (Holtzer-Cabot), Willard Lowe (Electric Appliance), John Runzel (Runzel-Lenz), S. M. Jones (Jones & Winter), Frederic Greer (Harvard Electric), John R. Wiley (Standard Underground Cable), Joseph C. Belden (Belden Manufacturing Company), Samuel Mankowitz (Sterling Electric Wire), E. F. Kirkpatrick (McRoy's Conduits), H. E. Procunier (Moon Manufacturing Company), J. C. Hubacker (Monarch Telephone Manufacturing Company), Mathias Klein (M. Klein & Sons), A. T. Naugle (Naugle Pole and Tie Company), K. B. Miller (McMeen & Miller) and Charles Messer (Dearborn Elec-pany).

STROMBERG-CARLSON TEST SET.

The unusual mechanical features of the Stromberg-Carlson No. 841 test set are shown in the two illustrations herewith. The apparatus is arranged in a well-constructed



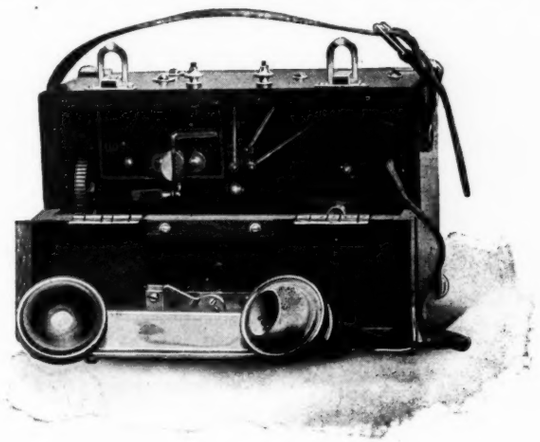
New S.-C. test set (closed).

heavy oak box, reinforced at all corners and protected at each of the eight exterior corners by heavy cast, trunk, corner knobs. Heavy hinges and snap catches are also provided for the part that opens. A heavy sole leather strap is furnished, which is arranged for taking an extra long strap if necessary.

One of the special features embodied in this instrument is a ½ M. F. condenser in the receiver circuit to eliminate a switch hook on the box for the purpose of breaking the line circuit. With this arrangement the instrument may be

rung any time when on the line. The complete microphone rests in the open part of the box, its principal feature being that it is all metal and indestructible.

The microphone is provided with a battery push button which cuts in the battery when necessary; in other words, only when talking. In other forms of instruments, it is said, the instant the receiver is off the hook, and as long as the receiver is off the hook, the battery is being consumed, which is unnecessary and greatly shortens the life of the

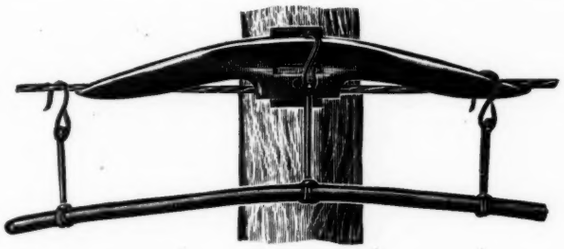


New S.C. test set (open).

battery. The ringer is not across the line when ringing up. The generator shunt cuts out the bell, putting the full voltage of the generator on the line when ringing with the generator. This, it is claimed, makes it possible to obtain the greatest power from the generator. The code numbers of this instrument are No. 841 3-bar equipment, No. 842 4-bar and No. 843 5-bar.

THREE NEW SPECIALTIES.

A scientifically correct ground for electric currents for which it is intended to convey, is analogous to the flow of water in pipes under pressure and the rapid distribution at the point of egress, namely, no interruption or lessening of the capacity and the terminal should be greater than the

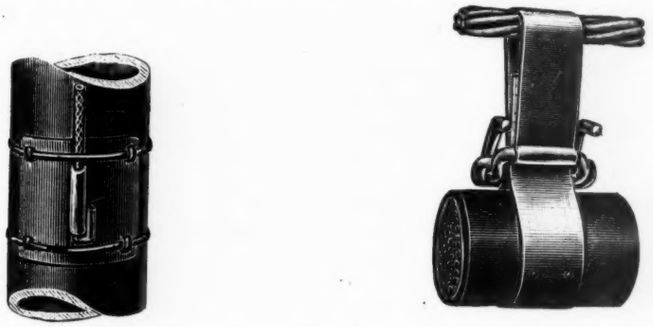


"Economic" pole cable switch.

conductor. The American Cable Clip Company, of New York City, claims that the ordinary method of stripping about thirty inches of No. 16 wire and wrapping it about the ground pipe is deficient, because the contact surface is only equivalent to the thin edge of the outer circumference of the wire, which in 30 inches is equal to about one-sixteenth of an inch square. It also is claimed that the more recent method of using a ground clamp is still worse, as, although the clamp device is very elaborate, it receives but a couple of twists of wire under a binding post, and the contact surface is infinitesimal, besides the clamp device is exposed and subject to oxidation and deterioration. The "Simplex" ground connector, made by the American Cable Clip Company, is said to have none of these defects. The tubular depression is in contact with three-eighths of an inch square of ground wire, and, owing to its shape and application, permits of a rapid and thorough diffusion and consequent proper grounding of the electric current.

It can be taped over or cemented and thoroughly protected from atmospheric influences.

The New York Central & Hudson River railroad prefers the American Cable Clip as being the easiest to apply and the only one that can be removed without mutilation and which may be used repeatedly. It conforms to all the standards required for a first-class cable hanger. The cost of putting it on is a considerable factor of saving, as it is claimed twice as many can be put on in a given time as of



Ground connector and cable clip.

any other make. The price is no higher than for inferior clips. No specially trained workmen are required and any lineman can put them up.

This company's "Economic" pole cable switch is portable and is said to do the work of a man on each pole while erecting the cable with the temporary "S" hooks. It is made substantially of steel, and will stand the roughtest usage.

All three of above specialties are made and for sale by the American Cable Clip Company, 132 Prince street, New York City.

NEW PROTECTOR AND DISTRIBUTING BOARD.

A new and inexpensive protector and distributing board is being put on the market by the American Electric Fuse Company to take the place of the old mica fuse strip panel, a wooden enclosed tubular fuse being used in the new board and the fuses being held in place by the famous "American hook contact." No tools are needed to insert or remove the fuse. Ample and convenient space is left for distribution and following jumpers is easy work.

The switchboard cable is soldered in and all jumpers begin and end under a screw connection. All wood work is well seasoned maple, boiled in linseed oil, making it moisture proof and of high insulation. Metal parts are of heavy brass, whitened. The leading feature in this panel is the hinged portion where outside cable connects. The panel can be unlocked and swung open and the cable clips are then very easily gotten at. When cable is soldered in and laced up, the hinged portion is closed back against the wall and locked into place. This is a most unique and convenient combination of a distributing board, fuse and carbon lightning protector. The board when shipped is equipped with fuses for which no extra charge is made.

The American Electric Fuse Company would be pleased to give further information to any one interested. The code number on this board is 131.

SWEDISH-AMERICAN SELLS GOOD ORDERS.

The Swedish-American Telephone Company has just secured an order from the Chilliwack Telephone Company, of Chilliwack, B. C., Canada, for 500-line central office equipment and 500 complete instruments, together with all necessary construction material. The Swedish-American company is well represented in the northwest territory. It

has also just secured a contract from the new Farmers' & Citizens' Telephone Company, of Elgin, Okla., for 300 telephones and three complete central office equipments. This new Oklahoma company expects to operate in two or three counties in southwestern Oklahoma.

THE NEW ATLAS ANCHOR.

To reduce the amount of dirt disturbed in setting an anchor to a minimum, the Atlas Anchor Company, Cleveland, Ohio, has recently perfected an anchor which is said to afford from 75 to 85 per cent of its surface to pull against undisturbed earth. The plate is made of flat steel and in sizes according to the strain which they are intended to withstand. At the bottom of the plate are located two malleable iron ribs, projections of which extend through the plate and engage with ears upset on the end of the steel anchor rod, leading to the surface of the ground. The parts of the anchor are easily disassembled when not under strain.

The hole in the ground in which the anchor is set, is dug by the aid of a common post-hole digger, so altered as to enable the work to be done without disturbing the earth to more than three-fourths the width of the anchor plate.

In addition to the anchor, the same company has patented an anchor setter by the aid of which the anchor, after being buried, is drawn into a permanent position in solid earth. This setter consists of a frame of hardwood, having a height of about 10 inches and on top of which frame rests a pivoted bearing through which passes a threaded bolt.

At the upper end of this bolt is a hand screw, provided with a thrust ball bearing to reduce the friction, and enable one man working alone to place the anchor in a permanent position.

After an anchor has been buried, the setter is attached to the rod and sufficient strain is supplied by the aid of the hand power screw to draw the anchor into solid earth at the sides of the hole in which it is located. When this is accomplished, it is claimed the anchor is in its permanent position and will not creep. The cost of the anchors and anchor setters made by this company is claimed to be very small and according to tests made, they are said to be reliable, efficient and durable.

THEODORE GARY INVESTMENT COMPANY.

The Theodore Gary Investment Company announces the opening of an office in the Telephone Building at Macon, Mo. This company is incorporated for $200,000, and is organized to deal generally in securities of first-class telephone companies.

The telephone, coming rapidly into its own in public estimation, becomes one of the most desirable of public utilities, and the securities of these companies are a very suitable investment.

DECAY OF POLES.

The Universal Pole & Post Preserving Company, of Circleville, Ohio, has issued a pamphlet on the "Decay of Poles," by Dr. Howard Jones. The method of the company under the patented process of H. P. Folsom is to remove the earth around the pole to a depth of about 16 inches. Then all the decayed wood is scraped or cut away with special tools and a hole is bored to the center of the pole to discover if the center is sound. If the center of the pole is hollow this is filled with a chemical in solution with water. An asbestos and asphalt jacket of special manufacture is then placed around the pole, leaving a space between the jacket and pole of about one inch. This space is filled with a composition of germicidal chemicals mixed with sand, and the top is sealed and a good finish is placed upon it with cement. The appliance is more indestructible than the pole, and together with the chemicals will protect the pole for a period of many years. The chemicals applied to the pole will kill the fungi and destroy the enzyme, and at the same time will harden the wood. Poles treated seven years ago show no infection at the present time. The jacket is so durable that, at the end of a given number of years, the contents can be freshened by the injection into the space between the jacket and pole occupied by the sand of a new supply of fungicide.

MUSKEGON BASEBALL CHAMPIONS.

The American Electric Fuse Company's baseball team, of Muskegon, Mich., has had a very successful season on the diamond this year. During the season they won fifteen straight games and lost but four throughout the entire year. The team was organized in 1906 by the employes of the American Electric Fuse Company, and last year won fifteen

American Electric Fuse Company's champion baseball team.

of the twenty games played. This record made the nine representing the great protector factory the Muskegon factory champions. The record made this year excells even that of 1906.

The accompanying illustration shows the American Electric Fuse Company ball club. Reading from left to right the members are: Top row, C. Calkins, M. Radoye (mgr.), W. Heiser, A. Bertrand, P. Feltman, R. Baker. Lower row, R. Hetz (capt.), M. Sherman, A. Maring, P. Jones.

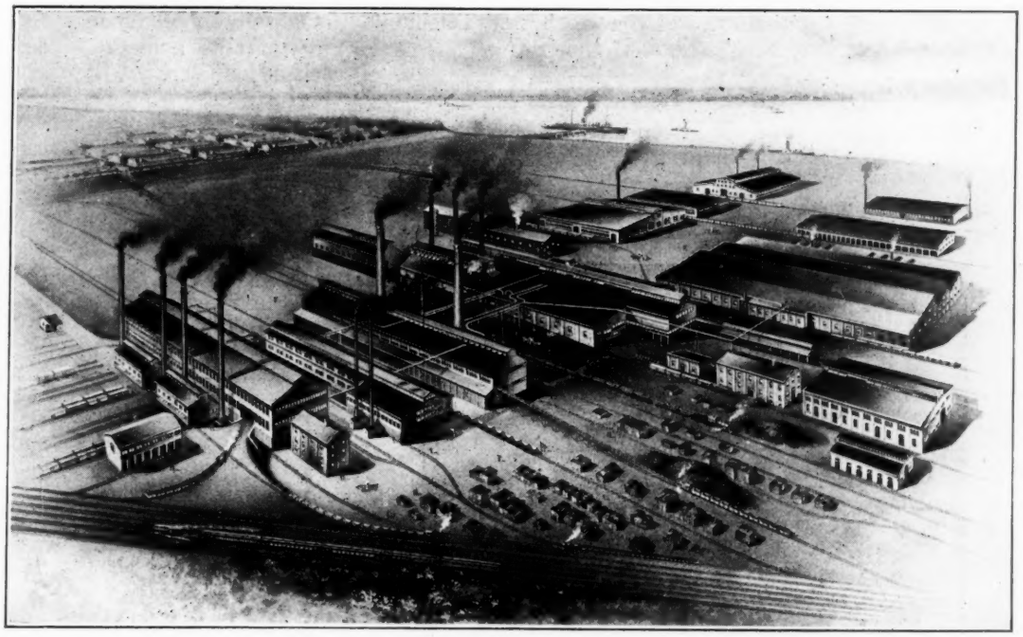
PEIRCE SPECIALTY COMPANY.

The Peirce Specialty Company wishes to announce that Ralph L. Crane, who has heretofore represented the company in St. Louis, has resigned from its employ. Owing to this fact, and so as to handle its business to the best advantage and give its customers the attention of a man trained by long experience in construction material, it has grouped St. Louis, Kansas City, Milwaukee, Indianapolis and Chicago into one sales territory, which will be handled in the future by A. L. Haase, with headquarters at 48 E. Van Buren street, Chicago, Ill.

Mr. Haase has been associated with this company since its organization and was associated with Mr. Peirce both as a manufacturer and in the service of the Chicago Telephone Company for many years prior to that time. Mr. Haase has the happy and valuable faculty of making his customers' interests his own, and the company's many patrons in this territory may know that their orders will receive his conscientious care.

EXTENSION TO ROEBLING WORKS.

An important addition has recently been made to the works of John A. Roebling's Sons Company, which will materially increase the company's facilities for the production of wire and wire rope. The addition, which is a complete plant in itself, is located about ten miles south of the main works at Trenton, N. J., and is termed for convenience, the Kinkora works, because of its proximity to a village of that name. Included in the buildings shown in the illustration, are a thoroughly modern steel plant with four open hearth furnaces, designed to produce the quality of steel suitable for high grade wire; blooming and rolling mills; mills for drawing wire; shops for cleaning, annealing and galvanizing; and all the auxiliaries necessary for the production of wire from molten steel.



Kinkora Works of John A. Roebling's Sons Co.

The additional works are on the line of the Pennsylvania Railroad Company, side tracks of which enter the yard. Rods, which are not drawn into wire at the Kinkora works, are loaded upon steel cars built for the Roebling company, and taken to the wire mills at Trenton.

The village of Kinkora being too small to provide homes for the men employed at the works, the company has built an entirely new town upon fields in the open country. This town, of brick and stone, with wide streets and roomy houses, has its own water works and electric lighting station, buildings for religious and secular entertainment, a school house, hotels, a public park, recreation grounds and all the conveniences of a thoroughly modern city.

The United States government has established a post office in the town and officially named it Roebling.

The additional works and their equipment, as well as the new town, were designed by the engineering force of the John A. Roebling's Sons Company and built under the direct supervision of Mr. C. G. Roebling, president of the company.

S. D. LEVINGS ENTERS INDEPENDENT FIELD.

The Independent field has recently aquired a new recruit in the person of Mr. S. D. Levings, who has been for the past three years assistant to the construction engineer for the Chicago Telephone Company.

S. D. Levings.

Mr. Levings recently severed his connections with the Bell concern to accept a position as a constructing engineer for the well-known firm of McMeen & Miller of Chicago, who recently acquired the contract for engineering and constructing an automatic plant in Houston, Texas, where they have detailed Mr. Levings as engineer in charge. Mr. Levings will follaw the most up-to-date principles in the design of the Houston plant, and the incorporators of the new company are to be congratulated on having secured such eminent services for their engineering work.

THE "MESCO" DRY BATTERY.

The Manhattan Electrical Supply Company, Chicago, is sending out a very superior line of literature, descriptive of its famous "Mesco" dry battery for telephone work. It is intended that every telephone man shall be made thoroughly acquainted with the company's claims for this popular battery during the current season. Answering the query, how they can keep the "Mesco" in the high-grade class and yet sell it at a low price, the Manhattan people say: "The carbon is purchased from the gas retorts and ground in our own mills; the manganese is delivered direct from the mines and pulverized at our own works; the plates are moulded and carbonized in our own works; we make the zinc cups and connectors in our own factory." It is claimed by them that the "Mesco" saves 25 per cent to 40 per cent in battery service expense and is made by skilled workmen from the best material obtainable under expert supervision. Twenty years devoted to making batteries also should be a pretty fair guarantee of reliability, it is true, and the public evidently appreciates this point as well as the numerous others advanced.

The Manhattan asks for no contracts and sells its "Mesco" at the very attractive figure of 10 cents each in lots of 100—even lower for larger quantities.

FRANK B. COOK'S NEW ORDERS.

Frank B. Cook says that he has secured orders for the distributing boards and protectors for most of the large exchanges that are being installed at the present time.

Omaha heads the list with 6,000 pairs of No. 20. Spokane, Washington, has an order in for 2,500 pairs of No. 8, and Edmonton, Canada, for 1.000 pairs of No. 10 protectors. The Tri-State Telephone & Telegraph Company, of Minneapolis, is installing an addition of 4,720 pairs of Cook's No. 10 protectors and orders are also in for the following: Alhambra, California, 300 pairs No. 10; Westfield, New York, 400 pairs No. 10; Seattle, Washington, 800 pairs; Lexington, Illinois, 400 pairs No. 10; Wheeling West Virginia, 310 pairs No. 10; Oakland, California,

1,000 pairs; Nebraska City, Nebraska, 700 pairs No. 10; Beaver Falls, Pennsylvania, 1,000 pairs No. 8.

Mr. Cook has also received the first order for terminals for Omaha, thus assuring the use of Cook protectors throughout the entire plant. The initial order is for 900 terminals, part of them being Cook's new porcelain type.

Among other large orders for subscriber's station protectors are the American Union Telephone Company, New Castle, Pa., 1,000 type B-5, and the Rochester Telephone Company, Rochester, N. Y., 1,000 B-7.

STROMBERG-CARLSON'S LATEST.

The latest creation of the Stromberg-Carlson Telephone Manufacturing Company in printed matter is a 32-page booklet, entitled "Lost Time," describing the various private branch exchange systems and equipments. From the artistic, as well as practical standpoint, this work is excellent. The cover is printed from a special design in four colors and bronze, then stippled and roughed on both sides. The inside pages are printed in three colors; the illustrations being made for two colors with key plates in half tone, also auxiliary color in zinc tint plates. All headings, index designs and initial letters are mainly of special design from engraved plates.

Cover design Stromberg-Carlson Booklet.

This book will be mailed free to all telephone people asking for it. Ask for booklet No. 80.

WHAT A FIRST CLASS TELEPHONE SWITCH MEANS.

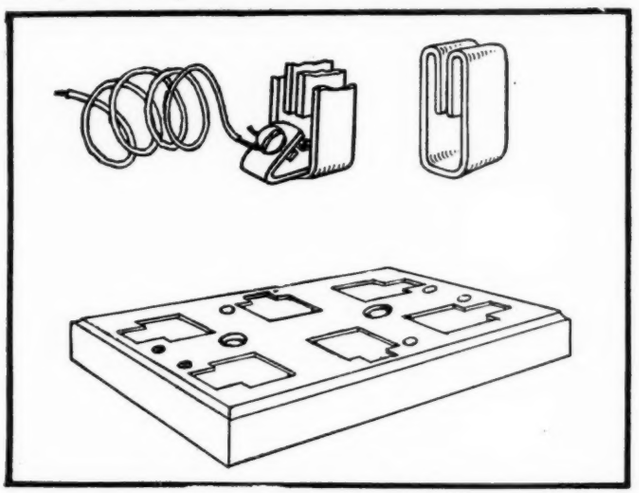
The man who buys telephone switches has a natural tendency to select the cheapest, and why shouldn't he? They all look very much alike and the difference in price, though slight, rings just as pleasantly in his pocket as in that of any one else.

Telephone switches, however, are liable to contain numerous faults, and as these are only evident when carefully looked for, the prospective purchaser should know just where to find them. The chief difficulties found in telephone switches come from warped bases, loosening of clips and poor alignment. All these difficulties are reduced to a minimum in a first-class switch of proper design and construction.

The Trumbull Electric Manufacturing Company of Plainville, Conn., states that in its well known switches it overcomes these difficulties as follows: Selected porcelain which is not warped is used exclusively for the bases. Recesses in the base hold the clips firmly and keep the alignment, so that when substantial screws fasten the clips there is absolutely no chance for loosening, and when self-adjusting clips hold the blade, the alignment is accurate. By self-adjusting clips the company means those that by their peculiar design enable the resilient force of the copper to insure a perfect contact with the blades.

Even with all possible care in mechanical design the serviceable switch must be correctly assembled, and it takes skilled workmen to do this. Small girls and boys, or shiftless men, cannot do the work properly.

The latter class of labor will from time to time forget to tighten a screw, fail to notice a defective clip or base, and so counteract all advantages in the design. In addition to these prime necessties in the production of a first-class switch, there enters the element of convenience. It is necessary to have holes in the base at each clip for concealed work. Also a good point is to have the binding contacts raised from the base for convenience in attaching wires, and to have these wires held tightly under the head of the screws, to avoid being cut or scored.



Trumbull telephone switch.

It pays for the man who wants satisfaction and the longest possible service to consistently consider the real points which determine the value of the goods. By writing to the Trumbull Electric Manufacturing Company, at Plainville, Conn., one may obtain a great deal of very interesting general information about switches.

K. B. MILLER ON HARGIS JOINTS.

Kempster B. Miller, author of "American Telephone Practice," recently made an expert investigation of the well known Hargis cable splicing joints made by W. N. Matthews & Bro., of St. Louis. His report is embodied in a folder which will be sent free by Matthews & Bro., to any telephone man sending his address. Mr. Miller finds among other things that the Hargis joints are moisture proof, readily accessible for changes or tests and economical—but to get all he says, get the folder.

The stockholders of the Southwestern Home Telephone Company which operates in Southern California, authorized the creation of a bonded indebtedness of $1,000,000. Of this, $100,000 is to be used to clear up the debts of the company and the remainder for further extension and improvements.

TRADE NOTES.

THE CRESCENT LUMBER COMPANY, Pittsburg, has a stock of 15,000 Missouri red cedar poles on hand and announces that it is prepared to "show you" in the matter of prices.

AT THE RECENT ANNUAL MEETING of the directors of the Peirce Specialty Company, C. L. Peirce, Jr., Elkhart, Ind., was re-elected as president and treasurer, and W. G. Lee was elected as secretary.

A TWENTY-PAGE BOOKLET, descriptive of the Easophone, and its adaptability for use, has been issued by the Wire & Telephone Company of America, Rome, N. Y., and a copy will be sent to any address upon request.

A NEW FOUR-PAGE CIRCULAR has been issued by the Stromberg-Carlson Telephone Manufacturing Company, devoted to detailed and illustrated description of the No. 8 self-restoring drop for generator call switchboards.

THE LEEDS & NORTHRUP COMPANY, 4901 Stenton avenue, Philadelphia, Pa., is prepared to furnish information concerning the particular type of testing set best adapted to the various conditions which arise in telephone practice.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia, has removed its San Francisco Sales Offices from the temporary location at 11 Hawthorn street, San Francisco, to the Crocker Building, San Francisco, where they will be permanently located.

THE DE VEAU TELEPHONE MANUFACTURING COMPANY, 27 Rose street, New York City, has ready for distribution a new catalogue covering common return and metallic circuit intercommunicating patented, ball-bearing, automatic, switchless telephones.

THE EDGECOMBE COMPANY, of Cuyahoga Falls, O., has taken up electrical contracting, and shall be pleased to receive copies of late catalogues of electrical and telephone supplies. This concern manufactures the celebrated "Red Cross" pipe joint compound.

THE E. C. FRADY MANUFACTURING COMPANY, Chicago, is mailing out a series of attractive bulletins descriptive of its adjustaphones, telephone holders, coin detectors, etc. All telephone men are invited to ask for this literature if they have not already received it.

AN ATTRACTIVE two-color circular has been issued by the Durant Electric Supplies Company, 54 Fifth avenue, Chicago, descriptive of its duplex drop wire "Ironite"—the economical substitute for copper—as well as of batteries, brackets, pins and cross-arms are listed.

FRANK B. COOK'S "Advance Booklet of Terminals and Junction Boxes" is prepared for the convenient reference purposes of every telephone man who believes in protecting his investment. A card to Mr. Cook at 240 West Lake street, Chicago, will bring a copy of this booklet.

THE GRAEBER-ENTRIKIN Manufacturing Company, Philadelphia, wishes to place a copy of its new catalogue on "Invincible Cash Register Pay Stations" in the hands of every telephone manager or purchasing agent. A number of very strong claims are made for the "Invincible" and all of these are cleverly presented in the new Graeber-Entrikin catalogue. Ask for it.

CATALOGUE A OF THE GENERAL STORAGE BATTERY COMPANY, 42 Broadway, New York, presents description and price list of "high-duty" type Bijur storage batteries for stationary service. The Bijur plates are of lead, and the instructions for the most part are directly applicable to this type.

THE NATIONAL TELEPHONE SUPPLY COMPANY, 3923 Superior avenue, Cleveland, O., reports a strong and increasing demand for its "non-breakable" messenger hangers. This hanger is especially designed for durability and the company will be pleased to demonstrate its value in actual service to all interested persons.

THE VOTE-BERGER COMPANY, LaCrosse, Wis., is mailing out new bulletin sheets descriptive of its D. & T. anchors and two-ball adjusters. If you have not already received one, ask the American Conduit Company, Chicago or New York, for its latest post card bulletin, No. 215, showing the "Cost of Labor per Cubic Yard of Concrete."

H. B. CHRISTENSEN COMPANY, Inc., 33 Murray street, New York, claims to save time and money on its blue printing work. Telephone companies wishing to make prints of circuits and layouts or individuals who wish to keep a set of blue prints for reference and to preserve tracings can obtain prices, etc., by writing to the address given.

THE DOUBLEDAY-HILL ELECTRIC COMPANY, Pittsburg, Pa., has issued a new catalogue comprising seven hundred and twenty-five pages, 10x6½, and describing a complete, comprehensive, and up-to-date line of electrical material. All obsolete matter has been entirely eliminated, and nothing but the latest, and most approved material is listed.

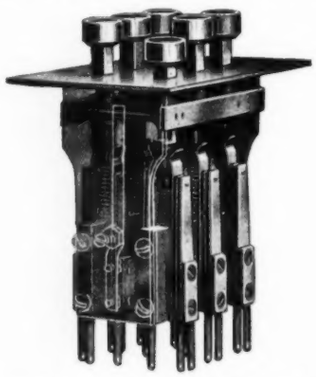
THE BROOKFIELD GLASS COMPANY, New York, has just issued a very handsome catalogue of its standard Brookfield glass insulators. These are of the screw type, in regular cone and knob types, but are made in a great variety of shapes and sizes, while special types are made to order particularly for power transmission. The catalogue is exceptionally good because all the insulators are shown full size, "shadow," bringing out every exterior and interior detail, and each cut is accompanied by the necessary data as to thread, groove, weight and quantity per barrel, etc. A page is also devoted to the standard thread itself, from threads to the inch.

THE DIELECTRIC COMPANY OF AMERICA, Belleville, N. J., manufacturer of "D. E." weatherproof wire and "H. H." special insulated wire for trying uses, is laying down some interesting installations using its patent system of underground construction. With this system the trench is occupied by a box in which the conductors are run suspended and spaced by porcelain bridges placed at fixed distances in the box. The porcelain bridges are self-locking on the wires and retain them rigidly in place while the insulating compound is poured into the box permanently sealing the wires in a homogeneous dielectric. This system is unaffected by changes in temperature and proof against damage by corrosion. The company announces one installation which has been in continuous use for over two years carrying twenty-four wires, six of which carry 2,200

volts; twelve, 5,500 volts; four, 6,600 volts, and two, 110 volts, without a dollar in expense for repair, or delay in transmission of any kind.

CORWIN AUTOMATIC INTERCOMMUNICATING APPARATUS.

The Corwin Telephone Manufacturing Company, of 143 South Clinton street, Chicago, deserves more than passing mention in these columns for the earnest and business-like manner in which it has set about meeting the strong and constantly increasing demand for high-grade intercommunicating apparatus at reasonable prices. This concern, which owns valuable patents and possesses a finely equipped and prosperous factory, has for its prime object the building of intercommunicating apparatus, which does away with jacks,

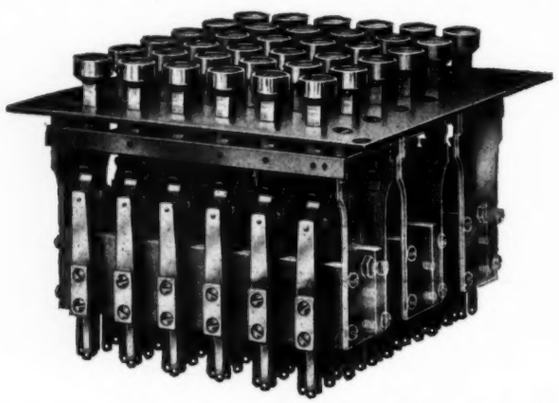


Corwin automatic apparatus, showing key locked.

plugs and cords and replaces them with a single button for each line at each telephone in the system.

In this manner it simplifies the circuit connections, avoids the breaking of cords, short circuiting of plugs and poor connections between plugs and jacks. Above all, it saves the telephone user time and confusion, as the one button is used for ringing as well as talking purposes. Another feature of great importance claimed for the Corwin apparatus is a combined ringing and talking key, which is very substantially made so as to stand the continual wear and rough handling to which such parts are usually subjected.

The electrical contacts are claimed to be absolutely re-



Corwin automatic apparatus, showing detail and mounting of keys.

liable and the springs just heavy enough to retain their elasticity and yet not impede the action. The plungers also are so arranged that they will not stick when released. The mountings are of ample size and of material which will not corrode or rust.

The accompanying illustrations show a group of buttons assembled complete, and particular attention is invited to the simplicity of construction.

The plungers are made from square brass stock to prevent them from turning in the top mounting plate. The lower portion of the plunger is turned to a suitable size to allow a hard rubber bushing, having a hole in the center, to be forced over it from the lower end and up to the center.

This rubber bushing rests against the German silver master contact springs and forces them into engagement with the talking and ringing contacts when the button is pressed. A removable paper number, covered with a transparent celluloid, is held on to the top of the plunger by means of a metal ring. The top and end mounting plates are accurately stamped with steel dies, so that all parts are interchangeable. Guide slots are punched in the end mounting plates which support the mechanism for tripping and locking the buttons when in action. Brass mounting bars are used for supporting the contact springs and these bars are drilled so as to hold the lower end of the plunger in alignment. A spiral steel compression spring is used for restoring the button when released.

Bessemer coppered steel rods are used for tripping the buttons, these rods being riveted to the guide bars, which rest in the slots of the end mounting frame. A heavy adjustment spring is fastened to the end of one of the mounting plates and rests against the tripping device, having an adjustment screw engaging it in such a manner that any

Corwin automatic intercommunicating apparatus; desk set.

adjustment may be had. This allows the key to be placed in any position and yet all buttons will lock and unlock in the most satisfactory manner. Standard sizes of keys are carried in stock as follows: Six, twelve, eighteen, twenty-four and thirty-six. Other sizes will be made to order, if required.

Generally speaking, there are three classes of intercommunicating service, as follows:

First—All telephones intercommunicating. This service is so arranged that any one telephone can call and converse with another and not be interfered with by any other parties who may be talking over another pair of wires at the same time.

Second—Limited service. In this class, only a certain number of instruments can call each other, the other being able to call only those departments with which they have occasion to transact business.

Third—Party line service. In this class, all instruments are connected to one line and all bells ring at the same time, a code signal being used for each different station.

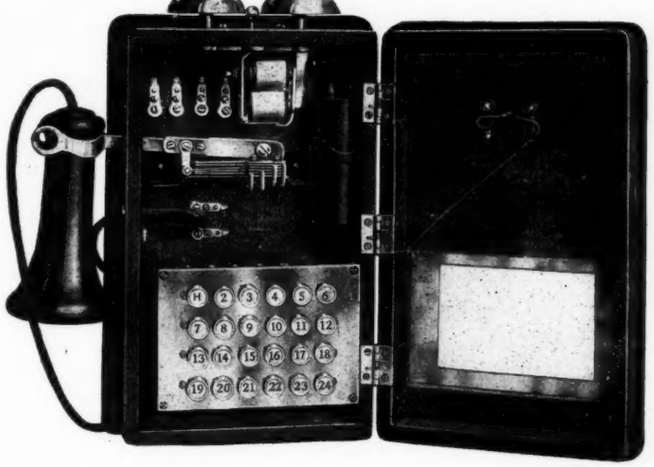
The Corwin company has its systems arranged for any of the above classes of service and will be pleased to furnish information regarding same promptly. A booklet, descriptive of the company's common battery apparatus of the intercommunicating automatic type is now in press. The conditions and requirements of any given business will best

determine which of the three intercommunicating systems above named should be adopted.

Herewith are shown illustrations of the Corwin desk and wall type, automatic, push button system, equipped for common battery metallic circuits, which is said to be the most practical system to employ where regular intercommunicating service is desired. The Corwin company also arranges

Corwin automatic intercommunicating telephone, closed.

these telephones for use in connection with exchanges, having full common battery equipment. Any party wishing to call another in the intercommunicating system, presses the button corresponding to the number of his line as far down as possible, which rings the bell at that station. Removing the fingers from the button restores it to a talking position, and removing the receiver from the hook switch connects the telephone to the selective line for talking. The party called answers by pressing the home button (marked H) into a locking position and removing the receiver from



Corwin automatic intercommunicating telephone, open.

the hook switch which connects the telephone to the called or home line for conversation. Any button, being pressed to a locking position, unlocks and other button which previously had been locked down, and thus prevents other telephones than the one desired from being connected for talking. This will be appreciated when it is understood that no locking or unlocking mechanism is required in connection with a desk telephone, and at the most four conductors, and in some cases but two conductors, are used from the desk stand to the key box located on or near the desk.

Where it is desired to use exchange connections to and from the intercommunicating system, it is so arranged that any of the telephones may call central by pressing the trunk button (marked C) into a locking position, and removing the receiver from the hook switch when the telephone is connected for talking. An answering station is used for the purpose of receiving incoming calls and transferring them to the proper party. The attendant at the answering station, upon receiving a call from the exchange, presses the trunk button into a locking position, removes the receiver from the hook switch and answers. A party in some other department being wanted, the attendant presses the trunk button clear down which connects a high-wound locking relay across the trunk line and holds the disconnect signal so that the operator will not disconnect the trunk line while the attendant is calling the party to answer. While pressing the button down, the attendant hangs the receiver upon the hook switch which disconnects the telephone from the line, then calls the party and requests them to answer on the trunk line.

The intercommunicating party, wanted on the trunk line, answers by pressing the trunk button and removing the receiver from the hook switch and the telephone, being low resistance compared to the high-wound locking relay, will allow the mechanism of the relay to release, leaving a clear trunk line to talk over. As soon as the party hangs the receiver upon the hook switch, the line is clear, the operator gets the disconnect and takes down the connection. This arrangement does not require any hold signal plug key, jack or coil, and no calling back to the attendant to take down the hold signal device, but leaves the trunk line free as soon as the parties have finished talking.

The buttons for the trunk connections are the same as the ones for intercommunicating purposes so that any one not in use may be connected for trunking and the only apparatus needed to make any telephone an answering station is a high-wound locking relay for the disconnect hold signal and an ordinary extension bell.

The Corwin Telephone Manufacturing Company is particularly desirous of having experienced telephone managers examine its apparatus with a view to recommending its use in connection with their local systems.

UNFAIR TO THE TELEPHONE.

"Of course, the telephone service isn't just all that we would like to have it," said a telephone man, "but it would probably surprise the average subscriber if the truth were known, to learn how often the telephone is unjustly abused. People break appointments and shift the blame upon the innocent telephone instrument scores upon scores of times every day. It is much easier for them to say, 'I was near the telephone all afternoon and it did not ring,' or, 'I tried to get you, but central said you didn't answer,' than to admit that the appointment was really forgotten or purposely broken. The telephone has its faults, doubtless, but it quite too often has to bear the burden of the public's sins."

POLES SET IN CONCRETE.

The poles on the main line of the Visalia (Calif.) Electric Railway are of peeled redwood, thirty-six feet long, with 14-inch base and 7-inch top. They are imbedded in concrete to a depth of six feet. Except at switches and in the yards they are 120 feet apart. Incidentally it is of interest to note that forty poles were set in an eight-hour day. The concrete consisted of cement and sand, one to four.

PROGRESS OF THE MONTH

Compiled by H. A. Downey

NEW COMPANIES

VENUS, Texas.—The Venus Telephone Company has been organized with A. D. Frost as president.

AYRSHIRE, Ia.—A farmers' telephone company is being organized here with a capital stock of $5,000.

THOMPSON, Ia.—The King Mutual Telephone Company has been incorporated with a capital stock of $2,520.

LEBANON, Tenn.—The Wilson County Independent Home Telephone Exchange has been organized here.

CARLOS, Minn.—The Central Telephone Company of Carlos has been incorporated, with $25,000 capital stock.

ENCAMPMENT, Wyo.—Hon. W. C. Henry and others are organizing an Independent telephone company here.

ETNA, Nebr.—The Etna Mutual Telephone Company has been incorporated. C. O. Lord is the chief promoter.

SYLVANIA, Ohio.—The Citizens' Telephone Co., capital $10,000, has been incorporated by F. J. Maisen and others.

STELLA, Okla.—The Farmers' Independent Telephone Company has been incorporated by L. S. Wheeler and others.

OSAWATOMIE, Kans.—The Farmers' Mutual Telephone Company has been incorporated with a capital stock of $10,000.

HOOD RIVER, Oreg.—The Home Telephone Company has been organized at this place with a capital stock of $40,000.

LOGAN, Okla.—The Logan Telephone Company, capital $5,000, has been incorporated by Frank Wentworth and others.

WORDEN, Wis.—The West Worden Mutual Telephone Company has been organized with David Keinholtz as president.

IROQUOIS, S. D.—The Iroquois-Bancroft Farmers' Telephone Company has been incorporated with a capital stock of $3,500.

MOTT, N. D.—The Cannon Ball Telephone Company has been incorporated, by Geo. H. Stone and others here. Capital $5,000.

AMBOY, Wash.—The Amboy Telephone Company has been chartered with a capital stock of $2,000 by W. F. Gerber and others.

MAX, N. D.—The Max Telephone Company, capital $10,000, has been incorporated, with $10,000 capital, by D. J. Grant and others.

PARDEEVILLE, Wis.—The Pardeeville Telephone Company has been incorporated with $4,000 capital by S. H. Smith and others.

RICEVILLE, N. Y.—The People's Mutual Telephone Company has been incorporated, with $10,000 capital, by Jesse Martin and others.

WINNSBORO, Texas.—The Winnsboro Telephone Co. has been incorporated for $15,000 by W. D. Weir, R. L. Weir and C. B. Weir.

JOHNSTOWN, Nebr.—The Johnstown Telephone Company has been incorporated. William Coryell is among the incorporators.

DEL RIO, Tex.—The Del Rio & Western Telephone Company. capital $20,000, has been incorporated by L. Rust, J. H. Wiggins and others.

GOODRICH, Wis.—The Goodrich Telephone Company, capital $3,000, has been organized by John Kraemer, E. M. White and F. M Perkins.

STICKNEY, S. D.—Articles of incorporation have been filed for the Truoro Telephone Company. The capital stock of the company is $40,000.

LONG EDDY, N. Y.—The Delaware and Sullivan Telephone Co. has been incorporated with a capital stock of $10,000 by J. T. Male and others.

MCHENRY, N. D.—The McHenry Telephone Company has been incorporated with a capital of $15,000 by Anton Jenson, E. J. Horn and others.

PINGREE, N. D.—The Pingree-Foothill Telephone Company, capital $30,000, has been incorporated by Thos. Price, C. B. Joos and others.

SERGEANT BLUFF, Ia.—The Sergeant Bluff Telephone Company has been incorporated with a capital stock of $20,000 by A. J. Westfall and others.

NEW ROCKFORD, N. D.—The Air Line Telephone Company has been incorporated by A. J. Ritcher, J. P. Knoack and J. A. Paulson, of New Rockford.

LOUIS, Okla.—The Louis Farmers' Co-operative Telephone Company has been incorporated with a capital of $2,000 by C. J. Johnston and others.

GEARY, Okla.—The Maple Telephone Company has been chartered with a capital stock of $600 by A. C. Gilmore, Byron Baker and S. S. Schymore.

BAGLEY, Iowa.—The Bagley Mutual Telephone Company has been incorporated with $9,990 capital, and is formed by six lines running into Bagley.

SERGEANT BLUFFS, Ia.—The Sergeant Bluffs Telephone Company, capital $20,000, has been incorporated by A. J. Westfall, Geo. S. Parker and others.

DELL, Wis.—The Dell Co-operative Telephone Company, of Dell, Vermont county, has been incorporated, by Edward Clark and others. Capital $2,500.

SALON, Okla.—The Salon Telephone Company has been incorporated with a capital stock of $2,500 by A. C. Bothrick, W. T. Hugate and C. Pittman.

AYRSHIRE, Ia.—Articles of incorporation have been filed by the Ayrshire Farmers' Mutual Telephone Company with an authorized capital stock of $5,000.

EDMOND, Okla.—The Edmond Southwestern Telephone Company has been incorporated by E. M. Pettigrew, W. R. Corbett and others. Capital, $2,800.

JUNO, Ky.—The Broadway Home Telephone Company has been organized here with $5,000 capital. Jere Hawthorne, president; F. M. Evans, secretary.

GRACEMONT, Okla.—The Spring Creek & Anadarko Telephone Company has been incorporated by J. F. Prewitt, A. H. Pickett, C. A. Robinson and others.

LEXINGTON, Neb.—The Independent Telephone Company has been incorporated with a capital stock of $12,500. C. F. Wiggins is interested in the project.

ADDISON, Ala.—Dr. C. A. Olivett and Z. McVay, of Double Springs, have incorporated the Winston County Telephone Company, with $5,000 capital.

GRACEMONT, Okla.—The Spring Creek & Anadarko Telephone Company of this city has been incorporated with a capital of $1,900 by J. F. Prewitt and others.

SWEA CITY, Iowa.—The Farmers' Central Telephone Company has been incorporated with $4,200 capital by C. H. Giles, John Nelson and Gust Thorson.

VAN ETTEN, N. Y.—The Van Etten Telephone Company has been incorporated with a capital stock of $500 by J. W. Gee, G. Banfield and B. U. Osborn.

EVANT, Texas.—The People's Telephone Co., Evant, Coryell county, capital stock $4,000, has been incorporated by A. Wurts, W. T. Thorn and E. E. Watson.

FULTON, Ill.—The Fulton County Telephone and Telegraph Company has been incorporated with a capital stock of $2,500 by F. W. Platterberg and others.

SARLES, N. D.—A Farmers' Mutual Telephone Company has been organized with the following officers: President, G. W. Baker; secretary, M. Atkinson.

ANOKA, Minn.—The Coon Creek Telephone Company has been organized with E. C. Pendell as president. Work of putting in a rural line will be begun this fall.

ROANOKE, Va.—The Roanoke County Telephone Company has recently been incorporated with a capital stock of $5,000. Monroe Grant is president of the company.

MECOSTA, Mich.—The Mecosta Mutual Telephone Company, capital $9,000, has been incorporated by Frank P. Wilber, J. A. Swartz and others of Remus, this county.

MADISON, Wis.—The Curtiss & Withee Telephone Company of Hoard, Clark county, $900. Incorporators: Theodore Thompson, William Peterson and J. S. Jacobson.

EDINBORO, Pa.—The People's Bell Telephone Company has been chartered in this city with a capital of $6,000 by M. S. Gillespie, Joseph Taylor, E. W. Marsh and others.

CLARION, Pa.—Application will be made for a charter for a company to be known as the Monterey Telephone Company, to operate in Clarion and Armstrong counties.

WARREN, Okla.—The Warren Central Telephone Company has been incorporated with a capital stock of $2,000 by T. S. Woodby, A. F. Hendricks, T. F. Baird and S. A. Biddy.

NASHVILLE, Tenn.—The Locust Mount Telephone Company of Washington county has been incorporated with a capital stock of

$5,000. The incorporators of the company are as follows: S. T. Martin, R. A. Walker, Jesse Hunt, Dr. George C. Horn and J. H. Hale.

BERKLEY, Va.—The People's Telephone Company will be organized with the following officers: President, J. G. Baum; secretary, W. Engell; treasurer, C. M. Williamson.

CANTON, Ill.—The Fulton County Telephone and Telegraph Company has been incorporated with a capital of $2,500 by M. J. Gorman, W. D. Platteburg, Lewis Thompson and others.

DURAND, Wis.—The Inter-County Telephone Company, with a capital of $8,000, has been incorporated at Durand, by W. H. Gifford, N. P. Ward, Ed Will and Charles Winget.

STATESVILLE, N. C.—The Clio Telephone Company has been incorporated, with a capital stock of $7,000, by H. S. Long, J. Patterson, J. O. Gaither, W. W. Holland and others.

PALESTINE, Texas.—The Palestine Telephone Company has installed new exchange equipment and will make many extensions and improvements in outside construction this year.

ARNETT, Ok.—Articles of incorporation have been filed by the Arnett Telephone Company, of Arnett, with a capital stock of $10,000, by C. O. Shaffer, J. O. Ralston and J. J. Henry.

COLLIERVILLE, Tenn.—The Collierville Telephone Company has been incorporated with a capital stock of $10,000 by S. Hinton, W. W. Norfleet. L. T. Ward, E. A. Johnson and H. Irby.

STONY POINT, N. C.—The Clio Telephone Company has been chartered with an authorized capital of $7,000. E. S. Millsops is secretary and treasurer. Address, Stony Point, N. C.

MIDWAY, N. C.—The Midway Telephone Company has been incorporated with $10,000 capital by E. C. Snider and others to build a line from Midway, Davidson county, to Winston-Salem.

EL PASO, Ill.—The Panola Independent Telephone Company of this city has recently been incorporated with a capital stock of $525. The incorporators are Joseph Haas, James Bailey and others.

PERRY, Ark.—The Choctaw Telephone Company has been chartered, with a capital stock of $5,000; M. N. Spencer, president; J. S. Harris, vice-president; S. H. Spencer, secretary-treasurer.

AUGUSTA, Me.—Winthrop & Readfield Telephone Company. To do a telephone business in Kennebec and Androscoggin counties; $10,000. President and treasurer, E. M. Leavitt, of Winthrop.

HARRISBURG, Pa.—Articles of incorporation have been filed by the Lord's Valley Telephone Company of Lord's Valley, Pike county. The capital stock of the company is placed at $5,000.

NASHVILLE, Tenn.—The Van Buren County Telephone Co. has been incorporated with a capital of $5,000 by Thomas A. Head, E. T. Passons, W. A. Graham, O. P. Passons and L. T. Hutchinson.

ROCKWELL, Ia.—The Farmers' Telephone Company has been incorporated with a capital stock of $20,000. The incorporators of the company are as follows: J. H. Brown, W. A. Storer and others.

UNITY, Wis.—The Strum Telephone Company of Unity, Trempealeau county, has been incorporated with a capital stock of $8,000. The incorporators of the company are S. R. Anderson and others.

PINCHER CREEK, Alberta.—An Independent telephone company is being formed at Pincher Creek. J. E. Woods has a ten-year franchise and is interested with S. W. Berry in forming the company.

CAMANO, Wash.—The Camano Telephone Company has been incorporated with a capital stock of $5,000. The incorporators of the company are as follows: R. Garrison, E. G. Freeman and F. Van Cleve.

PADUCAH, Tex.—The Paducah Telephone Company has been incorporated with a capital stock of $15,000. The incorporators of the company are as follows: T. J. Richards, J. B. Earp and J. M. Barron.

ELKMONT, Ala.—An Independent telephone company is being formed by the citizens of this city. An exchange is to be installed, and connections established with Athens, Elkmont, Pettusville and Estaville.

OXFORD, N. Y.—The Preston & Norwich Telephone Company of Oxford, has incorporated, with a capital stock of $2,000. The directors are: Leander S. Law, Charles W. Powers and Burt E. Slater of Preston.

GRACEMONT, Okla.—The Spring Creek & Anadarko Telephone Co. has been chartered with a capital stock of $1,980; J. F. Prewitt, A. M. Pickett and C. A. Robinson, all of Gracemont, and others, incorporators.

WHITTIER, Cal.—The Southern California Home Telephone Exchange managers, from the various southern towns from San Diego to Santa Barbara, recently held their annual convention and banquet in this city.

RALEIGH, N. C.—The Clio Telephone Company of Clio, Iredell county, has been incorporated for the purpose of improving and extending the Clio telephone system. The authorized capital is $7,000. The incorporators of the company are as follows: H. S. King, E. S. Millsapps, S. C. Johnson, J. K. Patterson, J. O. Gaither, Dr. J. V. Williams, J. W. Redman, S. Gross, G. G. Martin, W. W. Holland.

CHILLIWACK, B. C., Can.—The farmers of Chilliwack have organized a company with a capital stock of $15,000 and plan to build a system covering the entire district, with a local exchange at this place.

JONESBORO, Tenn.—The Locust Mount Telephone Company has been incorporated with a capital stock of $5,000. The incorporators are S. T. Martin, R. A. Walker, Jesse Hunt, Dr. George C. Horn and J. H. Hale.

NEW CASTLE, Pa.—The International Engineering and Construction Company has been incorporated in this city with a capital stock of $25,000, for the purpose of constructing telegraph and telephone lines.

DEWEY, Wis.—The farmers of this vicinity are forming a telephone company to be known as the Torun Telephone Company with the purpose of building a line from Torun to Jordan, through Stevens Point.

ELLSINORE, Mo.—Articles of incorporation have been filed by the Farmers' Telephone Company with a capital stock of $3,000. It is the purpose of the organization to build lines to Homestead, Grandin and Williamsville.

BETHEL, Ont.—The People's Mutual Telephone Company, Limited, has been incorporated with a capital stock of $21,000 by Thomas Alexander Crawford. W. H. Sine, Arthur Franklin Rightmayer and others.

HINTON, Okla.—The Highland Telephone Company has been incorporated with a capital stock of $3,600. The incorporators of the company are as follows: Martin V. Nutt, Daniel R. Baysinger and Chas. G. Nash.

RICEVILLE, Pa.—The People's Mutual Telephone Company, this city, has incorporated with a capital of $10,000. Incorporators: Jesse Martin, A. Burrows, Tillotson; Albert Beakeslee, Matthew Merchant, Riceville.

AUGUSTA, Me.—The Winthrop & Readfield Telephone Company has been incorporated, with a capital stock of $10,000. E. W. Leavitt of Winthrop is president and treasurer, and J. Williamson of Augusta is clerk.

SEATTLE, Wash.—The Northwestern Electrical Company, of Seattle, has been incorporated with a capital stock of $250,000, and will build a plant for the manufacture and jobbing of telephone and electrical appliances.

ELLSINORE, Mo.—The Farmers' Telephone Company of Carter County has been incorporated with a capital stock of $3,000 for the purpose of building lines between Ellsinore, Homestead, Williamsville and other places.

CALEDONIA, Ark.—Articles of incorporation have been filed by the Farmers' Independent Telephone Company of Caledonia. Capital $3,000. Incorporators: J. P. Hall, president; S. B. Tadlock, B. H. Spiers and others.

CHATTANOOGA, Tenn.—The Locust Mount Telephone Company, Washington County, has been incorporated with a capital stock of $5,000 by S. T. Martin, R. A. Walker, Jesse Hunt, Dr. George C. Horn and J. H. Hale.

EGELAND, N. D.—Articles of incorporation have been filed by the Egeland Telephone Company. It is the purpose of the company to construct lines which will connect with the Cando-Rock lines now being constructed.

NORFOLK, Nebr.—The Norfolk Long Distance Telephone Company has been incorporated with a $200,000 capital by Burt Mapes, George B. Christoph and others for the purpose of building lines throughout this section.

PRATTSVILLE, N. Y.—The Johnson-Hollow Telephone Company has been incorporated with a capital stock of $500 and the following directors have been elected: Jacob Latz, M. T. Speenburgh, S. P. Ives, of Roxbury.

NEW ROCKFORD, N. D.—The Air Line Telephone Company has filed articles of incorporation. The incorporators of the company are as follows: A. J. Ritcher, J. P. Knoack and J. A. Paulson, all of New Rockford, N. D.

SLATER, Ky.—Articles of incorporation have been filed for the Slater Telephone Company. The capital stock of the company is $600 and the incorporators are as follows: C. E. Batts, T. J. Davis and F. M. Ashby of Slater.

WATSEKA, Ill.—Articles of incorporation have been filed for the Watseka Telephone Company with a capital stock of $35,000. The incorporators of the company are as follows: P. N. H. Muson, M. P. Turner, S. A. Walsh.

SWANTON, O.—The Swanton Home Telephone Company has been incorporated with a capital stock of $20,000. The incorporators of the company are as follows: M. Lockbiller, A. B. Lathrop, M. J. Linehan, L. M. Lathrop.

NEWALLA, Okla.—The Farmers' Independent Telephone Co., of Stella, Cleveland county, has been chartered with a capital stock of

$500; R. S. Wheeler, Jas. Church, C. W. Wilson, and others, incorporators. Mail to Newalla.

KNOX, N. D.—The North Knox Telephone Company has been incorporated with a capital stock of $6,500. The incorporators of the company are as follows: C. J. Markstad and Martin Steen, both of Knox, and James Kane.

HEATON, N. D.—The Heaton and Northwestern Telephone Company has effected a preliminary organization by the election of the following officers: President, Christian Blauer; vice-president, D. S. Schwab; secretary, A. E. Bean.

VAN ETTEN, N. Y.—The Van Etten Telephone Company has been incorporated with a capital stock of $5,000. The incorporators of the company are as follows: Dr. J. W. Gee, George Banfield and B. U. Osborn of this place.

DALLAS, Texas.—The Louis Farmers' Co-operative Telephone Co., of Louis, has been incorporated, with $2,000 capital stock, by C. J. Johnston, J. D. Sanders, B. F. Waller and J. L. Sanders, of Louis, and H. T. Mangus, of Hollis.

ONTARIO, Wis.—Articles of incorporation have been filed for the Brush Creek Farmers' Telephone Company. The capital stock of the company is $3,000. The incorporators are as follows: I. O. Hoff, P. A. Penderson and L. Olsen.

MCHENRY, N. D.—The McHenry Telephone Company has been incorporated with a capital stock of $15,000. The incorporators of the company are as follows: Anton Jensen, E. J. Horn, Chas. Burke, all of McHenry, and others.

BUTLERVILLE, Ind.—Articles of incorporation have been filed for the Harlan Telephone Company with a capital stock of $5,000. The incorporators of the company are as follows: J. T. Sharp, E. H. Smith, E. D. Jones and J. E. Spurling.

DOUBLE SPRINGS, Ala.—The Winston County Telephone Company has been organized with a capital stock of $5,000. The officers of the company are as follows: President, C. A. Olivett, Addison; vice-president, Z. McVey, Double Springs.

WARREN, Okla.—The Warren Central Telephone Company of Warren has been incorporated with a capital stock of $2,000. The incorporators of the company are as follows: T. S. Wood, A. F. Hendricks, J. T. Baird and S. A. Biddy.

MEDFORD, Minn.—The Straight River Rural Telephone Company has been incorporated with a capital stock of $10,000. The incorporators of the company are as follows: G. O. Lee, W. H. Boynton, W. F. Eaton, Joe Taylor and W. A. Bailey.

BENTON, Ark.—The capital stock of the Benton Telephone Company, recently incorporated, is $2,000, and the officers are: J. M. Caldwell, president; W. L. Caldwell, vice-president and general manager; J. F. Lee, secretary and treasurer.

EVERETT, Wash.—J. T. McChesney and E. C. Mony have incorporated the Everett & Cherry Valley Traction Company for the purpose of building and operating a railway and telegraph and telephone lines from near Snohomish to Fall City.

COLFAX, Wash.—Articles of incorporation have been filed for the Lone Pine Telephone Company, near this city, with a capital stock of $1,200. The incorporators of the company are as follows: William Richardson, E. L. Ross, H. E. Davis.

DURAND, Wis.—The Inter-County Telephone Company has been incorporated with a capital stock of $8,000. The incorporators of the company are as follows: W. H. Gifford, Ward E. Loodell, Phil Fox, N. P. Ward, Edward Will and Charles Singet.

BENTON, Ark.—The Benton Telephone Company has been incorporated, with a capital stock of $3,000. President, J. M. Caldwell; vice-president and general manager, W. L. Lee. These with W. L. Caldwell and J. F. Lee, are the incorporators.

AMBOY, Wash.—The Amboy Telephone Company has filed articles of incorporation with a capital stock of $2,000. The incorporators of the company are as follows: W. F. Gerber, B. A. Curtice, Johnson Hooper, William Healy and Ira Siesecker.

CARSON CITY, Nev.—J. F. Adams and associates of Tonopah and Carson, have organized a telephone company to operate lines running from Carson City to Tonopah and adjacent camps. The company is incorporated with a capital stock of $250,000.

GRAND HARBOR, N. D.—The Grand Harbor Telephone Company has filed articles of incorporation with a capital stock of $5,000. The incorporators of the company are as follows: Simon Kingslie, Devils Lake; O. N. Dion, Grand Harbor, and others.

NEOLA, Ia.—An Independent Telephone Company with a capital stock of $25,000 is being organized by the citizens of this city. Among those interested in the enterprise are Dr. J. H. Lowery, Frank B. Downs, T. J. Ensign and Riley Clark of Neola.

SHATTUCK, Okla.—The Northwestern Telephone Company has been incorporated with a capital stock of $15,000. The directors of the company are as follows: S. P. James, D. R. James, O. H. James, W. H. Springfield and F. C Darr, all of Shattuck.

TUNKHANNOCK, Pa.—The Merchants' Telephone & Telegraph Company, of Tunkhannock, has been organized, and has commenced the construction of a line between that city and Chinchilla. Additional lines are to be built to a number of other towns.

TORONTO, Ont.—The Dominion Telephone Manufacturing Company has been incorporated with a capital stock of $250,000. The incorporators of the company are as follows: A. W. Briggs, H. R. Frost, H. G. Meir, H. H. Phillips, A. J. Savage, Toronto.

CHILLIWACK, B. C., Can.—The Chilliwack Telephone Company recently organized has been incorporated with a capital stock of $20,000, in 2,000 shares of $10 each. It is the purpose of the company to establish a general telephone service in Chilliwack.

BENTON, Ark.—The Benton Telephone Company, with a capital stock of $3,000, has been incorporated. The incorporators of the company are as follows: J. M. Caldwell, president; W. L. Lee, vice president and general manager; W. L. Caldwell, J. F. Lee.

LOWELLSVILLE, O.—The Ohio Telephone Seal and Lockout Company has been incorporated with a capital stock of $5,000. The incorporators of the company are as follows: C. B. Robinson, John Freck, W. W. Cubbison, W. J. Lomax, C. E. Braatz and others.

RICHMOND, Va.—The Union Telephone Company, of Branchville, has been incorporated by W. R. Sykes, W. W. White, C. B. Vick, J. G. Stancill and J. B. Rogers. The capital stock of the company is $2,500 and its purpose is to construct a telephone line.

JACKSONVILLE, Ore.—Articles of incorporation have been filed for the Medford-Blue Ledge Telephone Company, with a capital stock of $3,000. The incorporators of the company are as follows: F. C. Page, Geo. W. Donnell, Chas. Strange and Walter H. Parsons.

HARRIETSVILLE, Ont.—The Harrietsville Telephone Association has been incorporated with a capital stock of $25,000. The incorporators of the company are as follows: W. Doan, S. E. Facey, J. C. McNiven, W. B. Lane, J. Smith, W. J. Coates, North Dorchester.

LOUIS, Okla.—The Louis Farmers' Co-operative Telephone Company has been incorporated with a capital stock of $3,000. The directors of the company are as follows: C. J. Johnson, J. D. Sanders, B. F. Waller, J. L. Sanders, all of Louis, and H. T. Morguis, of Hollis.

BANTRY, N. D.—Articles of incorporation have been filed by the Bantry Telephone Company of this city with an authorized capital stock of $10,000. The incorporators of the company are as follows: James McIntyre, D. K. McKain, G. R. Case, H. Wylie, and Fred Rusk, all of Bantry.

NAPOLEON, Ind.—The Napoleon Telephone Company has recently been incorporated for the purpose of operating a telephone system. The capital stock of the company is $1,500. The incorporators of the company are as follows: Frank Hiner, Jos. H. Newman and others.

MILWAUKEE, Wis.—The Curtis & Withee Telephone Company of the town of Hoard, Clark county, has filed articles of incorporation The capital stock of the company is $900 and the incorporators of the company are as follows: Theodore Thompson, William Peterson, and J. S. Jacobson.

TOPEKA, Kans.—The Independent North & South Railway has been chartered with a capital stock of $10,000. It is the purpose of the company to construct a railway, telegraph and telephone lines. G. A. Leeds and F. H. Daniels of Kansas City and H. E. Ware of this city are directors.

KENMARE, N. D.—The Greaves Telephone Company has been incorporated with a capital stock of $150,000. The incorporators of the company are as follows: G. W. Greaves, Q. Richards, both of Kenmare; M. P. Johnson of Donnybrook and J. J. Greaves of Glencoe, Minn.

WILLOW SPRINGS, Mo.—The Willow Springs Local and Long Distance Telephone Company has been incorporated at Willow Springs, with a capital stock of $50,000. President, H. J. Rowe; vice-president, T. F. Muir; secretary and treasurer, George H. McClain; manager, W. N. Wicks.

CUNNINGHAM, Ky.—The East Cunningham Telephone Company has been incorporated at this place with a capital stock of $1,050. The incorporators of the company are as follows: D. B. Elsey, J. Beard and T. W. Burrow. It is the intention to construct a line from Cunningham to Bardwell.

RANDOLPH, Utah.—The Utah and Wyoming Telephone Company has been incorporated at Randolph, with a capital stock of $10,000. The company will soon install a system to connect Randolph, Woodruff, Laketown and Evanston. Wesley K. Walton is president, and George Spencer, managing director.

MIDLAND CITY, Ill.—The Midland Telegraph Company has been incorporated with a capital stock of $10,000. The incorporators of the company are as follows: Nathan S. Smyser, John A. McKeown and F. W. Raymond. It is the purpose of the company to construct telephone and telegraph lines.

SPRING GAP, W. Va.—The Little Capon and Spring Gap Telephone Company has been incorporated with a capital stock of $5,000. The incorporators of the company are as follows: W. W.

Moreland, J. E. Darr, Spring Gap; S. D. Dicken, Higginsville; M. L. Dicken, E. W. Noland, Levels.

MURDOCKSVILLE, Pa.—Application will be made shortly for the incorporation of the Murdocksville Independent Telephone Company. The incorporators of the company are as follows: J. C. Campbell, J. H. McLarn and Joseph Cooley. The work of construction will probably begin at an early date.

COLUMBUS, O.—The Fitzsimmons Telephone Company has filed articles of incorporation in this city. The capital stock is $5,000. The incorporators of the company are as follows: E. Heeb, James J. Mullaney, Harry Burckhardt, Charles Baker and Ferdinand A. Basson. The company will do business in Norwood.

LEXINGTON, Tenn.—The Broadway Home Telephone Company has recently been organized in the western portion of this county and will be capitalized at $5,000. A line will be run from this city to Juno, there to intersect other Independent lines. J. Hawthorne, president. An exchange will be established in this city.

CHICAGO, Ill.—The New American Union Telegraph Company has been organized with a capital of $5,000,000. L. K. Davis, First National Bank building, states that the company will be ready to begin operations by January 1. J. P. Hornaday, 27 William street, New York, is said to be connected with the enterprise.

FULTON, Ill.—The Fulton County Telephone & Telegraph Company is the name of a new company recently organized for the purpose of operating telephone and telegraph systems. The capital stock is placed at $2,500. The incorporators of the company are as follows: F. W. Plattenburg, M. J. Gorman and others.

STATESVILLE, N. C.—The Goodwill Telephone Company has been incorporated at this place with a capital stock of $600 for the purpose of erecting telephone lines. The incorporators of the company are as follows: Messrs. Geo. M. Yeague, A. W. Preston, Roberson, Strider & Co., E. H. Pegram and E. S. Zimmerman.

EDINBURG, N. D.—A new Independent telephone company has been organized at this place under the name of the Edinburg and Tiber Telephone Company and the following officers have been elected: President, Henning Gunhus; secretary-treasurer, O. Fauskee; directors, Dan Halvorson, A. N. Brunsvold, Jorgen Nygaard.

GUTHRIE, Okla.—The Farmers' Independent Telephone Company of Stella, Cleveland county, has been incorporated with a capital stock of $500. The incorporators of the company are as follows: R. S. Wheeler, James Church, C. W. Wilson, J. L. Mays, J. A. Herring, and A. V. Hulse of Newalla and T. J. Whitten of McLoud.

COLUMBUS, O.—Articles of incorporation have been filed for the Dayton Telephone Lockout Manufacturing Company of Dayton, with a capital stock of $100,000. The incorporators of the company are as follows: Dan W. Kneisley, Charles S. Billman, William H. Schank, John D. Shively, William C. Baker and John W. Kreitzer.

PERRY, Ark.—The Choctaw Telephone Company of Perry has been incorporated with a capital stock of $5,000. The officers of the company are as follows: President, M. N. Spencer; secretary and treasurer, S. H. Spencer; vice-president, John S. Harris. The above officers and G. B. Colvin are the incorporators of the company.

WARMAN, Sask., Can.—A local telephone company has been organized and about $3,200 worth of stock has already been subscribed. The following directors have been elected: M. Morrish, M. L. Strickland, H. Goodall, F. C. Harrington and J. McGill. A thorough up to date telephone system is to be installed at a cost of about $5,000.

WEST PLAINS, Mo.—A deal has been made whereby the Home Telephone Company of West Plains is to be incorporated and a line will be built at once, taking in Mammot Springs and other north Arkansas towns. The incorporators of the company are as follows: W. N. Wicks, Martin Peters, Dr. H. J. Rowe, Judge Geo. H. McCain and others.

MEKINOCK, N. D.—The Turtle Co-operative Telephone Company is the name of a new Independent telephone company recently organized at this place. The capital stock of the company is $50,000 a large amount of which has already been subscribed by the farmers of this district. Work on the construction of a rural telephone system will begin at an early date.

DEL RIO, Tex.—The Del Rio and Western Telephone Company was recently incorporated with a capital stock of $20,000. The incorporators of the company are as follows: L. Rust and J. H. Wiggins of this place, R. W. Prosser of Comstock, and I. S. Sharp of San Angelo. The purpose of the company is to build a telephone line from Del Rio to Uvalde.

GUTHRIE, Okla.—The citizens of Logan in Beaver county are contemplating the construction of a rural telephone system in that locality and with that end in view have secured a charter for the Logan Telephone Company with a capital stock of $5,000. It is the purpose of the company to build from Logan via Ivanhoe to Goodwin in Woodward county; from Logan via Marengo to Elmwood; from Logan via Sunset, Sophia, Conroy and Ragsdale to Fulton and from Madison via Logan to Lockwood. The incorporators of the company are as follows: Frank Wentworth, John Thompson and Thomas Smith.

LESLIE, Ark.—The Leslie Telephone Company has been granted a charter by the state with a capital stock of $15,000. The incorporators of the company are as follows: W. R. Foley, president; William T. Mills, H. F. Wilson, C. V. Pyne, George W. Smith, F. P. Greenshaw and A. E. Edwards. The company will construct and operate telephone lines in Searcy county.

WILLOW SPRINGS, Mo.—The Willow Springs Local & Long Distance Telephone Company has been incorporated with a capital stock of $50,000. The officers of the company are as follows: President, H. J. Rowe; vice-president, T. F. Muir; secretary and treasurer, George H. McLain; manager, W. N. Wicks. It is the purpose of the company to establish an office at this place.

WASHINGTON, Me.—The Washington Telephone Company has been organized at Washington for the purpose of constructing, operating and maintaining telephone lines in Washington, South Liberty and Burketville, with a capital stock of $1,000. The officers of the company are as follows: President, Charles A. Lynch of Washington; treasurer, W. F. Hatch of Washington.

BLUFFTON, O.—A company to be known as the Bluffton Anchor Company has been incorporated with a capital stock of $2,000. The incorporators of the company are as follows: John Bixel, Chas. Dillman, G. H. Lewis, E. A. Armentrout and F. H. Downing of Lima. It is the purpose of the company to manufacture a device for the purpose of anchoring telephone and telegraph poles.

THOMPSON, Iowa.—Articles of incorporation have been filed by the King Mutual Telephone Company with its principal place of business at Thompson and branch offices throughout the surrounding country. The capital stock is $2,500, and the following officers have been named: F. J. Brooker, president; A. B. Mhyr, vice-president; H. H. Mattison, secretary and treasurer.

DEMOCRAT, N. C.—The North Buncombe Telephone Company has been incorporated with principal office at Democrat. The purpose of the company is to maintain and operate a telephone system and lines in Buncombe county. The authorized capital stock is $5,000, with $1,000 subscribed. The incorporators of the company are as follows: Jas. N. Morgan, J. D. Murphy, Jas. C. McElray.

CINCINATI, O.—The Southern Ohio Tri-State Independent Telephone Company of Cincinnati has been incorporated, with a capital stock of $50,000. It is the purpose of the company to operate in Butler, Clermont and Warren counties. The incorporators of the company are as follows: D. C. Collins, Jr., George H. Kolker, A. J. Koch, Thomas V. Sullivan, John Eggers and J. P. Bliss.

NAPOLEON, Ind.—The Napoleon Telephone Company just incorporated, has for its purpose the contsruction of a telephone system in Napoleon and will extend its lines throughout Ripley, Decatur, Franklin, Dearborn, Ohio, Switzerland, Jefferson, and Jennings counties. The directors of the company are as follows: Jacob A. Meyer, Frank J. Grow, C. W. Foreman, and Lafayette Cox.

BRANCHVILLE, Va.—The Union Telephone Company has been incorporated with a capital stock of $2,500, maximum; $1,800 minimum. The incorporators of the company are as follows: W. W. Witte, Boykins; B. B. Vick, J. G. Stancill, J. V. Rogers, Branchville. It is the purpose of the company to construct a telephone line.

HURLEYVILLE, N. Y.—The Neversink River Telephone Company has been granted a charter. Lee V. Gardner is chief promoter and also vice president; Ellsworth Baker of Hurleyville is president of the company. Arrangements are now under way to extend the line from Divine's Corners and Neversink to Middletown, Liberty, Monticello and other places in Orange and Sullivan counties.

BEL AIR, Md.—Articles of incorporation have been filed incorporating the Susquehanna Pole Line Company of Hartford County with a capital stock of $50,000. The incorporators of the company are as follows: H. Clay Whiteford, J. Alexis Shriver, Alexander S. Bell, O. M. Whitaker and Joseph T. Deckman. It is the purpose of the organization to construct, own and operate telephone and telegraph lines.

WALLIS, Tex.—The Wallis Telephone Company has been organized at this place with a capital stock of $1,500. The officers of the company are as follows: Manager, E. F. Louwien; secretary and treasurer, W. L. Cuyler; trustees, F. D. Brandt and Frank Pazferny. It is the purpose of the company to install a local telephone exchange and extend lines, giving service to the farmers in the surrounding country.

BLENHEIM, Ont.—A meeting for the organization of the Blenheim & South Kent Telephone Company was held in this city recently. A set of by-laws was adopted and the following officers were elected: President, Dr. C. B. Lanford; vice-president, Neil Watson; secretary-treasurer, Geo. Taylor; directors, T. L. Pardo, W. J. Huffman, Dr. Hanks, Jas. Rutherford, A. Denholm. The company is incorporated under the laws of Ontario, with a capital

stock of $10,000. The intention is to operate rural telephone lines through South Kent, and the work of putting up lines will be commenced at once.

WOODSTOCK, Vt.—The Southern Vermont Telephone Company has filed articles of incorporation with the secretary of state. The company contemplates the construction and operation of a telephone system in Windsor, Windham and Bennington counties. The company has a capital stock of $5,000. The promoters of the company are F. A. Richmond, H. P. Clark and Harry W. Hoye of Woodstock, Glenn Lyman and others.

SUPERIOR, Wis.—The Douglas County Co-operative Telephone Company has been formed and articles of incorporation have been filed with the secretary of state. Officers have been elected as follows: President, Henry Ward of this city; vice-president, George H. Selden; secretary, H. D. Coyne; treasurer, E. Erickson; directors, George Kemp, John Leggett, George Selden, Henry Ward, A. T. Cochran and S. C. Woodhull.

LANSING, W. Va.—The Lansing Telephone Company has been incorporated with a capital stock of $5,000 to build and operate a telephone system. The incorporators of the company are as follows: J. H. Nickel, M. R. Dickerson, Nana Crawford, R. R. Crawford. This company has several miles of lines in Mt. Cove district and it is the intention to extend the system throughout the district and into Nicholas county.

BAGLEY, Ia.—The Bagley Mutual Telephone Company has been incorporated with a capital stock of $9,990, divided into shares of $30 each. The officers chosen are as follows: President, B. Corsant; vice-president, John Spears; secretary, A. F. Holmes; treasurer, W. E. Quayle. This is an organization formed by six of the telephone lines running into this place. The company will make improvements in the entire system.

DECATUR, Ill.—The Decatur Home Telephone Company, which has been incorporated in Jersey City, N. J., with a capital stock of $300,000, has been authorized to operate in Illinois with a capital stock of $300,000. This is the company organized to succeed the Macon County Telephone Company. The name Macon County Telephone Company, under which the old organization did business, has been dropped and the new name adopted.

PRINCETON, Ont.—The Princeton and Drumbo Telephone Company has made application for a charter. The petitioners are as follows: T. J. Daniels, T. Convey, A. C. Misener, W. H. Wells. W. A. Elmes, D. Blackmore, W. Courtney and Walter Murray. The capital stock is $20,000. The company will operate in Blenheim and Burford townships with head office at Princeton. Mr. J. R. Layton of Paris is promoting the enterprise.

NORWOOD, O.—The Norwood Telephone Company has filed articles of incorporation with the secretary of state at Columbus. The capital stock of the company is $15,000, and it is the company's intention to operate a telephone and telegraph system in Hamilton, Clermont, Warren, Butler and Montgomery counties. The incorporators of the company are as follows: Philip White, Peter Brooks, Harry N. Koverman and G. Tilden Davis of Norwood.

SOMBRA, Ont.—A company has been organized in this place under the name of the South Lambton Telephone Co-operative Association, Limited. The officers of the company are as follows: President, Edwin Tomlin; vice-president, J. F. Selman; secretary, G. M. Shepardson; treasurer, C. W. Smith; directors, H. S. Selman, J. F. Rivers, Alfred Selman, G. L. Smith, J. T. Stokes. The company will operate principally in Sombra township and purposes connecting the villages of Sombra, Wilkesport, Courtright and Port Lambton.

BELOIT, Wis.—The Wisconsin and Beloit telephone companies have been succeeded by the Home Telephone Company, which was organized some time ago by Walter M. Brittan and Mathias J. Ward of Beloit and Alonzo Burt of the Wisconsin Telephone Company. The officers of the company are as follows: President, M. J. Ward, Beloit; vice president, Alonzo Burt, Milwaukee; treasurer, W. M. Brittan, Beloit, secretary; J. J. Carney, Milwaukee; directors, M. J. Ward, W. M. Brittan, Joshua Foster, W. H. Grinnell, W. H. Hall, Alonzo Burt, J. J. Carney, C. Moore.

AMARANTH, Ont.—The Amaranth Telephone Co-operative Association held its annual meeting recently and elected the following officers: President, W. A. Wansbrough; vice-president, E. J. Bennett; secretary-treasurer, Stewart Tate; auditors, M. G. Varcoe and John Preston; directors, W. L. Craig, Wm. J. Jelley, Gus Groskurth, Wm. Warnock, Dr. Gaviller, J. Crombie. The reports presented showed a profitable business carried on during the year. It was decided to make a levy of 10 per cent on capital stock to wipe off indebtedness. New plans are being considered for extensions.

PILOT GROVE, Mo.—At a meeting of the stockholders of what was known formerly as the Lazy Bend Telephone Company it was decided to incorporate under the name of the Pilot Grove Independent Telephone Company. Application is to be made to the secretary of state for a certificate of incorporation, and work on the system commenced at once. The capital is given at $4,000, and the following officers and directors have been elected: J. V. Merceroe, president; Isaac Smith, secretary; Henry Brownfield, treasurer; John T. Davis, Grant Clark, Jacob Schneck, directors. Managers, Peter Dick, E. H. Harris, Jr., Grant Clark.

PETERSBURG, Va.—The Dinwiddie County Telephone Company has been organized here and the following officers elected: President, W. M. Sterns; vice president, Dr. B. C. Jones; secretary, A. J. Sutherland; treasurer, J. E. Young; directors, the above officers and C. M. Rives, J. C. Crawford and R. H. Lewis. The minimum capital stock of the company—$6,000—was all subscribed. The maximum capital stock of the company is $15,000, divided into shares of $25 each. The company will establish its central office at DeWitt, whence wires will be run to all parts of the county, and work on the enterprise will be begun without delay. The officers and directors of the company are all well known citizens of the county. David Barner is general manager of the company. Application will be made for a charter.

ELECTIONS AND MEETINGS

HARLAM, Mont.—The Harlam Telephone Company will install a new modern switchboard and otherwise improve the local system.

PRUNTYTOWN, W. Va.—At a meeting of the Pruntytown Telephone Company, recently organized, the following officers were elected: President, W. E. Carter; secretary, C. T. Reynolds; treasurer, C. B. Kinsey.

CLARION, Ia.—The stockholders of the Clarion & Northwestern Telephone Company recently held their annual meeting and re-elected the old officers and directors for the ensuing year. A good dividend was also declared.

VICTORIA, B. C., Can.—At the annual election of the Fort Seneca Mutual Telephone Company the following officers were elected: President, L. C. Umsted; vice president, W. C. Rosenberger; secretary, I. S. Edwards; treasurer, Frank Edwards.

BUTTE, Mont.—The Montana Independent Telephone Company has elected the following officers for the ensuing year: President, H. A. Gallway; vice-president, P. B. Moss; secretary and treasurer, Chas. J. Kelly; managing director, T. S. Lane.

LONGTON, Kan.—At the annual meeting of the stockholders of the Longton Telephone Company the following officers were elected for the coming year: President, A. B. McKay; vice-president, S. Crumrine; secretary, Lauren Hayle; treasurer, W. C. Boone.

WYMORE, Neb.—The annual meeting of the fifth district of the Nebraska Independent Telephone Association was held in this city recently. Among the improvements to be taken up soon are toll lines from this place to Marysville, Kans., Pawnee and Falls City.

JAMESTOWN, N. Y.—The Home Telephone Company has re-elected the following directors: Arthur C. Wade, W. R. McCanne, John H. Wright, George R. Fuller, William J. Maddox, Seneca B. Burchard, Brewer D. Phillips, Ralph C. Sheldon, Carl F. Laumb, T. W. Finucane.

ROCKVILLE, Ind.—The stockholders of the Parke County Telephone Company recently met and elected A. M. Adams president and L. N. Whitney of Indianapolis vice-president. Extensive improvements will be made at Montezuma and the entire system and exchange here will be improved.

CLEAR LAKE, Wis.—The Clear Lake Telephone Company has elected the following officers: President, George F. Griffin; vice president, F. A. Partlow; secretary, J. C. Saxton; treasurer, A. A. Holliday; directors, J. C. Saxton, A. A. Holliday, George F. Griffin, F. A. Partlow and C. W. Ward.

TEMPERANCEVILLE, Ont.—The Kent Telephone Company, Limited, which was recently incorporated, has elected the following provisional directors: T. H. Legge, W. H. Glass, Albert Wells, G. D. Lockhart and W. H. Legge. It is the purpose of the company to construct telephone lines in the county of York.

VENUS, Tex.—The officers of the Venus Telephone Company, recently organized, are as follows: President, A. D. Frost; vice president, A. J. Florey; secretary, John W. Bassett; treasurer, C. L. Barker. Application has been made for a charter.

YANKTON, S. D.—The Yankton Independent Telephone Company has elected the following officers: President, Fred Schnauber; vice-president,R. H. Jones; secretary, F. L. Van Tassel; treasurer, W. H. Edmunds. The board of directors is composed of the above officers and M. P. Ohlman, C. J. Novatny, C. H. Dillon.

MADRID, Ia.—At the annual meeting of the People's Telephone Company the following officers were elected: President, J. S. Kenson; vice-president, T. R. Dresser; secretary and general manager, John Van Zandt; treasurer, Oscar Oakleaf; directors, Wm. Roberts, E. P. Dalander, Henry Pies, L. F. Keigley and A. D. Larson.

WHEELING, W. Va.—The stockholders of the National Telephone Company of West Virginia held their annual meeting in this city recently. A committee composed of John A. Howard, Col. Thomas O'Brien, A. M. Schenk and George W. Baron was appointed to nominate a board of directors to be elected at a meeting of the stockholders to be held October 10. The statement of the business

for the year ending July 31 shows that after paying the interest on bonds $28,380.48 was paid in dividends in addition to placing a good surplus to the company's credit.

GRANVILLE, N. Y.—At the annual meeting of the Granville Telephone Company, held recently, directors were elected as follows: F. E. Hicks, F. T. Pember, J. N. Kelly, F. W. Story, E. D. Raymond, John O'Neill, J. H. Collins, W. A. Tenny, D. D. Woodward, E. J. Grady, F. A. Houstin, Dr. M. G. Parker, M. B. Jones, Ellis Greenleaf, C. T. Keller.

MT. PLEASANT, Ia.—At the annual meeting of the Mount Pleasant Telephone Company the following officers and directors were elected: President, W. J. Steckel; vice-president, R. S. Galer; treasurer, W. E. Keeler; secretary and manager, E. E. England; directors, W. E. Keeler, Frank Montgomery, H. J. Twining, R. S. Galer and W. J. Steckel

OZARK, Ark.—At a recent meeting the stockholders of the Home Telephone Company elected the following directors for the ensuing year: M. B. Conatser, George O. Benchman, W. L. Wagner, L. Ford and L. T. Morgan. The directors organized by electing the following officers: President, M. B. Conatser; vice-president, L. Ford; secretary, G. O. Benchman; treasurer, W. L. Morgan.

DEKALB, Ill.—At a recent meeting of the subscribers to the new telephone company it was found that the stock was more than fully subscribed. The following directors were elected: Franklin Hall, Geo. E. Dick, A. S. Bean, B. W. Lyons, D. E. McGirr, Hugh McQueen, F. B. Townsend, M. S. Campbell, S. E. Bradt. As soon as the company can be incorporated it will be ready for business.

AVON, Ill.—The annual meeting of the Avon Mutual Telephone Company was held recently and the following directors elected for the ensuing three year term: George W. Sinkel, Lester Ross and L. R. Lockwood. The board of directors organized by electing the following officers: President, Dr. S. S. Clayberg; vice-president, Oliver Crissey; secretary, Lester Ross; treasurer, A. Sundberg. The board also determined to begin repairs on the local system at once. W. E. Mark will have charge of this part of the work.

ASHLAND, O.—The Star Telephone Company has elected the following officers: President, G. E. Ullman; vice-president, S. H. Grabill; treasurer, George R. Freer; secretary and general manager, Howard Swartz; assistant general manager, Charles W. Good. The company operates exchanges in Congress, Creston, Homerville, Jeromeville, Lakeville, Lodi, Loudonville, Paradise Hill, Red Haw, Seville, Wadsworth and West Salem, together with toll stations at Burbank, Funk, Hayesville, Lakefork, Mohicanville, McZena, Olivesburg, Pavonia, Perrysville and Rowsburg.

NEW ALBANY, Ind.—The Southern Indiana Electric Company, which recently filed articles of incorporation with the secretary of state, has organized by the election of the following officers: President, Charles D. Knoefel, of New Albany; vice-president, Frank Beaucond, New Albany; treasurer, P. S. Pogue, Louisville. The headquarters of the company will be at 110 Market street, New Albany, where electrical appliances will be manufactured, a specialty being a terminal box for the protection of cable services which is an invention of Mr. Beaucond, general manager of the Home Telephone Company system in New Albany.

HILTON, N. Y.—The annual meeting of the Hilton Telephone Company was held in this city recently and a semi-annual dividend of 6 per cent was ordered paid. The following officers were elected for the ensuing year: President and manager, John E. Cooper; vice president, George Y. Webster of Rochester; secretary, Dr. Samuel Holman; treasurer, A. B. Fraser; directors, John E. Cooper, George G. Webster, Henry Bufton, Hanford Buss, Charles Hawes, Joseph Ingham, D. P. Webster, A. B. Fraser, Samuel Holman, V. A. Hovey. The company is capitalized at $15,000 and is in a prosperous condition. It has 410 telephones in service.

KANKAKEE, Ill.—At the regular yearly election of the Independent Telephone Company T. A. Kerr was elected manager to succeed A. J. Vernier, who has resigned to give his attention to the construction of a telephone system at Pontiac. The officers elected were as follows: President, Wm. Frasier; vice-president, Joseph Speicher; secretary, J. E. Sherwood; treasurer, T. A. Legris; manager, T. A. Kerr; traffic manager, W. S. Fischer; accountant, Louise Soran; directors, T. A. Kerr, C. M. McLaughlin, A. J. Vernier, T. A. Legris, J. E. Sherwood, I. W. Gottshall, Wm. Frasier, W. H. Radeke, Fred Briggs, C. N. King; executive committee, A. J. Vernier, T. A. Kerr and W. H. Radeke.

REORGANIZATIONS

PRINCETON, Ill.—The Bureau County Independent Telephone Company has been reorganized and the following officers named: Aaron Dunbar, of Dover township, president and general manager; Elmer Sapp, Wyanet, vice-president; O. A. Cole, assistant general manager. Many improvements in its plant are contemplated.

SAN DIEGO, Calif.—The San Diego Home Telephone Company has been reorganized with a capital stock of $1,500,000, divided into 1,500 shares of the par value of $100 each. The following directors have been elected: L. J. Rice, J. W. Boyle, T. C. Hammond, W. A. Wallow and J. H. O'Brien, all of San Diego. It is the company's intention to construct lines from San Diego to National City; from San Diego to Oceanside, and from San Diego to Escondido, with such other additional lines as may be necessary to take care of the business.

NEW CONSTRUCTION

LAMB, Ind.—The Farmers' Telephone Company will erect new lines in Lamb.

WALDRON, Ark.—The Waldron Telephone Company will erect several new lines.

PONTIAC, Ill.—The Livingston County Telephone Co. will build a line to Cornell

CUSHING, Wis.—The citizens of this vicinity will organize a farmers' telephone company.

BERLIN CENTER, Ohio—The Berlin Center Telephone Company will install a new plant soon.

ARGYLE, Ia.—The Big Four Telephone Company will erect a new exchange building in this city.

EXETER, N. H.—The People's Telephone Company will build a trunk line from Alton Bay to Exeter.

WASHINGTON, Me.—The Washington Telephone Company will build new lines to Fishtown and other points.

BROWERVILLE, Minn.—The local telephone company contemplates putting in a number of rural telephone lines.

EVAN, Minn.—The Sleepy Eye Telephone Company will construct a line between this place and Sleepy Eye.

PIKEVILLE, Ky.—The Eastern Kentucky Home Telephone Company will build a new line to Williamson, W. Va.

MISSION, B. C.—The Mission Independent Telephone Company is preparing to construct several long-distance lines.

ACKLEY, Iowa.—The Ackley Telephone Company is planning to install a new system. Work will be started soon.

ALBION, Mich.—The Springport Mutual Telephone Company will build additional lines between Springport and Albion.

EAST DOVER, N. S.—A telephone line is to be constructed between East Dover, Tarrance Bay and Lower Prospect.

WHEELING, W. Va.—The National Telephone Company will build through lines to Parkersburg, Huntington and elsewhere.

CHESAW, Wash.—The Farmers' Independent Rural Telephone Company will build a system covering this town and country.

SIOUX CITY, Ia.—P. C. Cockrell of the New State Telephone Company will build a new line from Hawarden to Orange City.

MAPLE FALLS, Wash.—The Maple Falls Telephone Company will soon begin the construction of a line to Glacier and also to Kendall.

ROSEBURG, Ore.—S. C. Bartrum, this city, who is supervisor of forest reserves, will build a number of telephone lines the coming year.

WILLOW SPRINGS, Mo.—The Willow Springs Local & Long Distance Telephone Company will build lines to Houston and other points.

AURORA, Mo.—The Aurora Telephone Company will establish an exchange in this place and will have connection with Mt. Vernon, Marionville and Verona.

CLEAR LAKE, S. D.—The Clear Lake Telephone Company will construct a number of farmers' lines which will add materially to its number of subscribers.

RAYVILLE, La.—Brown N. Dorrity will erect a telephone line from here to Mangham and the Gold Mine Plantation, thence to Winnsboro and further south.

NELIGH, Neb.—A new telephone line constructed by the patrons, but controlled by the Northern Antelope County Telephone Company, will be built northeast of this place.

ANACORTES, Wash.—The Farmers' Mutual Telephone Company will construct a new office building. The company is also constructing a line between this place and Burlington.

MENAHGA, Minn.—The Huntersville-Menahga Telephone Company is planning to construct a new telephone line. Work of construction will probably begin at an early date.

MANKATO, Minn.—The Mankato Citizens' Telephone Company will build a line from this city to Judson, and is considering the establishment of an exchange at Madison Lake.

SIOUX CITY, Ia.—C. H. Smith of the New State Telephone Company announces that he will build 6,000 miles of toll lines in all directions from Omaha within the next eighteen months.

REPUBLIC, Wash.—D. Stickles, manager of the telephone system here, is planning a line to Park City. Farmers in the vicinity of Pine Grove are also interested in another line to this town.

SIOUX FALLS, S. D.—Arrangements are being made for the installation of a telephone exchange in the town of Kennebec. The exchange will be installed and operated by Jene Brown and Byron

Reid, residents of that town. As soon as rural lines are constructed in that part of the county they will be connected with the Kennebec exchange.

WATSEKA, Ill.—The two telephone systems at this place have merged into one system under the name of the Watseka Telephone Company. The consolidation starts out with nearly 800 telephones.

VERMILION GROVE, Ill.—The Citizens' Telephone Company has constructed a line to Ridgefarm, and a switchboard has been installed. The company also intends building lines to Humerick, Indianola and Chrisman.

CLEAR LAKE, S. D.—Preliminary arrangements are being made for the construction of two new telephone lines to be constructed by the Clear Lake Telephone Company from this place to the regions east and northwest.

FAYETTEVILLE, N. C.—The Carolina Telephone and Telegraph Company, whose charter has recently been amended, expects to install a thoroughly modern system, with double metallic circuits and long distance connections.

WALHALLA, N. D.—R. H. Corsom, of Bathgate, has secured a fifteen-year lease of the Walhalla-Neche telephone line and expects to put in new lines to connect with it from Leroy and other points between Walhalla and Neche.

ELIZABETHTOWN, Ky.—The Home Telephone Company, of this city, and the Leitchfield Telephone Company propose to connect Elizabethtown and Leitchfield with a new metallic toll line, each company bearing half the expense.

TORREON, Mex.—Plans are on foot for the construction of a telephone system between this city and Durango, Dgo. John Woessner, Sr., owner and manager of the telephone system in this city, which bears his name, may be addressed.

CANTON, Ill.—The Fulton Telephone Company, recently incorporated, will construct a telephone line between this place and St. David. When its line is completed the new company will affiliate with the Canton Home Telephone Company, connecting with the latter's exchange.

ANGOLA, Ind.—The Taylor Telephone System, of which J. L. Taylor is president, and which covers Steuben county and connects with other counties, contemplates the erection of a new toll line between Angola and Auburn. It will have the co-operation of the Home Telephone Company in the work.

MEDFORD, Ore.—The Blue Ledge Telephone & Telegraph Company recently incorporated will construct a telephone line into the Blue Ledge mining district. Walter Parsons is manager of the company. The government will also construct a line connecting Blue Ledge with Grant's Pass. M. J. Anderson, forest reserve superintendent, has charge of the construction of the latter.

ORDINANCES AND FRANCHISES

SWEETWATER, Tenn.—Dr. D. S. Anderson has been granted a telephone franchise here.

WOONSOCKET, R. I.—The Home Telephone Company has applied for a franchise in this city.

VANCOUVER, Wash.—D. J. Eaton of the Home Telephone Company is seeking a franchise in this city.

OAKESDALE, Wash.—The Farmers' Telephone Company is asking for a franchise from the city council.

NORTHFIELD, Minn.—The Star Telephone Company will ask for a local franchise in this city in the near future.

LA GRANDE, Ore.—The Home Telephone Company has been granted a franchise in Le Grande for a period of 25 years.

MAROA, Ill.—The council has granted a telephone franchise to D. S. Anderson, who says he will at once install a new system here.

KENT, Wash.—Mr. Wagoner of the Northwest Telephone Company is seeking a franchise for an automatic telephone system in this place.

JUNEAU, Alaska.—Application has been made to the city council for a franchise to enter the city by the Juneau-Douglas Telephone Company.

FLORESVILLE, Texas.—The city council has been petitioned for a franchise by a new Independent telephone company which is being organized here.

NEW SMYRNA, Fla.—S. V. Hough of Deland, Fla., has secured a franchise to extend a telephone system from Lake Helen, Fla., to New Smyrna.

PILOT POINT, Texas.—The city council has granted a franchise to North Texas Telephone Co., of Sherman, Texas, to install a telephone system.

CARLISLE, Ky.—The Carlisle Telephone Company has applied to the council for a new ordinance for the sale of a franchise for the benefit of the company.

NORFOLK, Neb.—A franchise has been granted to W. J. Stadelman of this city, who represents Independent telephone interests. It is his intention to install an Independent telephone system in this city, which will bring long distance connections to this part of the state.

MARTIN, N. D.—The Martin Telephone Company has asked permission to construct country lines through its territory and will install an exchange here.

CALHOUN, Mo.—The Calhoun council has granted the Tebo Telephone Company the exclusive right to maintain a telephone system in this city for twenty years.

BERLIN, N. H.—At the regular session of the city council it was voted to give a franchise to the Essex and Coos Telephone Company to make extensions in this place.

LURAY, Va.—The town council of Luray, which for several weeks has been advertising a franchise, has disposed of the same to the Page Valley Telephone Company.

SABETHA, Kan.—A charter has recently been granted to several men of this town for a mutual telephone company and the city has granted a franchise for fifteen years.

UINTA, Utah.—The Uinta Telephone Company has applied for a franchise and right of way over the public highways of Wasatch county for the construction of telephone lines.

GALLATIN, Tenn.—The Home Telephone Company has under consideration the establishing of an exchange at this place, also the extension of a system from Gallatin to Sumner.

JEFFERSONVILLE, Ind.—The Jeffersonville Home Telephone Company, by Jas. W. Fortune, secretary, has applied for a franchise here, promising to build a complete system in two years.

LEITCHFIELD, Ky.—The City Council of Leitchfield has passed an ordinance ordering the sale of a franchise for an additional telephone service. This will be offered to the highest bidder.

MIDDLESBORO, Ky.—C. A. Chandler, London, Ky., has secured a franchise to construct and operate a telephone system in this town. He will organize the Middleboro Home Telephone Company.

CARLISLE, Ky.—The Carlisle Telephone Company has applied to the Carlisle City Council for a telephone franchise. The Carlisle Telephone Company was organized by local capitalists several years ago.

GEORGETOWN, Texas—Permission has been granted to the M. N. Halley Telephone Company to erect and maintain telephone lines along the Georgetown and Round Rock Road, and the Mason and Tisdale Road.

CARSON CITY, Nev.—A company of Salt Lake City capitalists, represented by J. M. Rich, have applied to the city board of trustees of Carson City for a franchise to operate and maintain a telephone line in this city.

NAPOLEON, O.—The Henry County Mutual Telephone Company will go into the probate court to secure a franchise to build a telephone system in Napoleon, the village council having refused to grant the franchise.

ELMWOOD, O.—It is the intention of the Elmwood Improvement Association to appeal to the Council of Elmwood Place to grant a franchise to the Independent Telephone Company to operate in the village.

Rantoul, Ill—Coon Bros. of this city have made application to the city council for a franchise permitting them to construct and operate a telephone system within the corporate limits of the city for a period of twenty-five years.

MAROA, Ill.—Dr. D. S. Anderson has made application for permission to establish a telephone system at Maroa. If the franchise is granted Dr. Anderson contemplates connecting his plant with the Independent line at Argenta.

ROCK HILL, S. C.—Application by the Rock Hill Telephone Company for a twenty-five year franchise has been considered favorably. This will call for an up to date common battery system to be completed within six months after granting the franchise.

ALEDO, Ill.—The new telephone company which was recently organized here will ask the city council for a franchise at its next meeting. The company now has a capitalization of $3,500 and expects to increase it to about $10,000 soon after a franchise is obtained.

TACOMA, Wash.—The Island Empire Telephone & Telegraph Company, recently incorporated has petitioned the County Commissioners to be allowed to extend telephone lines along the country roads. The company is connecting the islands of the Sound with Tacoma.

ALEDO, Ill.—At a regular meeting of the city council recently an ordinance was passed granting a franchise to the People's Telephone Company of Mercer county. It is the purpose of the new company to secure connections and furnish a free exchange to all parts of the county.

GRAND JUNCTION, Colo.—J. M. Rich, representing a number of Salt Lake City capitalists, applied for a franchise for an Independent telephone company in Grand Junction. This franchise is for

fifty years and includes the erection and maintenance of an Independent telephone exchange.

CHEHALIS, Wash.—E. E. Clement, who is closely associated with the Northwestern Long Distance Telephone Company, has asked the city council of Chehalis for a twenty-five year franchise. Mr. Clement promises to install an Independent service here and have it in operation within ninety days if his request is granted.

CARSON CITY, Nev.—The Consolidated Telephone Company composed of local capitalists is making an effort to secure a franchise in this place. The officers of the company are as follows: President, J. F. Adams; vice-president, Malcolm MacDonald; second vice president, H. F. Danberg; secretary-treasurer, James G. Sweeney.

HIGH POINT, N. C.—S. L. Blackburn, representing the North State Telephone Company, is interested in securing a telephone franchise for the purpose of constructing a line connecting High Point and numerous other towns with the city of Winston-Salem. If the franchise is granted about two thousand telephones will be installed.

JEFFERSONVILLE, Ind.—The Jeffersonville Independent Telephone Company is ready to ask the Board of Public Works for a franchise. Pledges will be given that work on a new exchange will be started within six months from the time of granting the franchise. Jacob Eberts is president of the company, which was incorporated some time ago.

ALTON BAY, N. H.—Having obtained a charter for the operation of an Independent telephone company, prominent men are forming a stock company for the construction of a trunk line from this place to Farmington, Rochester, Somersworth, Dover, New Market, Rockingham and Exeter, where connection will be made with the Independent system now in operation. It is the intention to extend this line into Boston, competing with the New England Telephone and Telegraph Company.

MENASHA, Wis.—The Fox River Valley Telephone Company has been granted a franchise in this city and expects to begin the installation of a system at once. The granting of this franchise has been brought about by the increase in Bell rates and the consequent abandonment of its service by the citizens of Menasha. The same conditions exist at Kaukauna and Neenah, at which places systems are also to be established connecting with the Fox River Valley Company's exchanges at Appleton and Green Bay.

SHERMAN, Tex.—At a meeting of the city council of Pilot Point the North Texas Telephone Company was granted a franchise to put in a local exchange at that place. This company is owned almost wholly by Sherman capital and has offices at Honey Grove, Bonham, Savoy, Bells, Whitesboro, Tioga, Colinsville, and Denton, as well as in this city and other places. The officers of the company are as follows: President, S. W. Porter; vice-president, S. D. Honoho; secreary-treasurer and general manager, C. A. Shock; directors, H. W. Head, N. A. Birge, Jim Biggs, C. A. Shock, S. W. Porter, S. D. Donoho and T. F. Rogers.

WATERLOO, Ind.—The town council has granted a franchise to the Waterloo Home Telephone Company for the construction of a new Independent telephone system, paving the way for the Independents to enter a territory which has been wholly controlled by the Bell company heretofore. The formation of the new Waterloo company has been undertaken by E. M. Popp of Fort Wayne, G. E. Spake of Monroeville, Daniel Strouse of Auburn and H. P. Stroph of Waterloo, and, while the organization will be owned and controlled in Waterloo, it is understood that the Home Telephone and Telegraph Company of Fort Wayne is behind the enterprise and will be closely related in a business way with the Waterloo company. The field here is regarded as an exceptionally good one, and it is believed that an exchange with 500 telephones will be in service within a short time.

EXTENSIONS AND IMPROVEMENTS

MINIER, Ill.—The Mutual Telephone Company is to extend its lines.

WASHINGTON, Me.—The Washington Telephone Company will extend its lines.

CORVALLIS, Oreg.—The King's Valley Corvallis Telephone Company will enlarge its system.

MYRTLE CREEK, Ore.—The Farmers' Independent Telephone Company will extend its lines.

BLUE SPRINGS, Neb.—The Gage Telephone Company will install a new switchboard and extend its system.

SUFFOLK, Va.—The Atlantic Telephone Company is considering many extensions and improvements in its system

CRETE, N. D.—It is the intention of the Hample-Crete Telephone Company to extend its lines from Crete to Stirum.

WAUBAY, S. D.—The Farmers' & Merchants' Telephone Company will extend its system here and hereabouts.

BRAZIL, Ind.—Among the improvements planned by the Brazil Farmers' Telephone Company are the installation of a new switchboard and the construction of new lines to Esmond and other points.

CAMBRIDGE, Minn.—The Maple Ridge Rural Telephone Company has decided to extend the line to Elm Park.

NAPOLEON, Ohio.—The Napoleon Home Telephone Company will extend its lines into the surrounding territory.

LORAIN, Ohio.—The Black River Telephone Company is installing a lot of cable and will make numerous extensions.

THREE RIVERS, Mich.—The Three Rivers Telephone Company has installed a new switchboard and will extend its lines.

HARTLAND, Minn.—The Hartland Telephone Company will extend its lines into Matawan to connect with the Wells lines.

MARKHAM, Ont.—The Markham and Pickering Independent Telephone Company contemplates making further extensions in its system.

CARO, Mich.—The Moore Telephone Company will extend its lines from near Caro to Akron and through Wisner township to Quanicassee.

MARYSVILLE, Kans.—The Marysville Telephone Company will make a number of extensions on its rural lines in order to better serve its patrons.

JEFFERSON, Ia.—The Greene County Telephone Company has arranged to install a new switchboard, to accommodate its greatly increased business.

WHITTIER, Cal.—The Home Telephone Company is planning to improve the telephone service in this city. Address A. G. Wardman, manager of the company.

CONNELLSVILLE, Pa.—The Tri-State Telephone Company, which was recently purchased by the American Union Telephone Company, will greatly improve its system.

PLATTSBURGH, N. Y.—The Clinton Telephone Co., this city, has decided to make further extensions and will in the near future build lines into territory not yet entered.

LAINGSBURG, Mich.—The Laingsburg Telephone Company has just expended about $8,000 in the improvement of its system, and other extensions are being considered.

HUNTSVILLE, Tex.—The Triangle Telephone Company of Huntsville expects to extend its lines to Jewett, Ulman and Richards and also to establish an exchange at North Zulch.

WELLINGTON, O.—Among the many improvements planned by the Wellington Telephone Company is the installation of a new switchboard capable of accommodating more than one thousand telephones.

PRAIRIE FARM, Wis.—The Prairie Farm, Dallas & Ridgeland Farmers' Telephone Company, which has been extending its system greatly, contemplates the erection of one hundred miles additional.

UNION GROVE, Wis.—The Union Grove Telephone Company will install a larger switchboard and will make other improvements, which will make it one of the best Independent companies in this territory.

BOWLING GREEN, Ky.—The Home Telephone Company will make many improvements amounting to $20,000. A number of new outside and underground cables are to be put in and the switchboard capacity increased.

FALLS CITY, Nebr.—At a meeting of the board of directors of the Southeastern Nebraska Telephone Company it was decided to install a new switch board. Many other improvements were agreed upon by the company.

PARIS, Tex.—The Citizens' Telephone Company of Paris will make extensive improvements in its long distance service, establishing connections at once with Dallas, Fort Worth, Wolfe City, Commerce, and Hugo, I. T.

BRYSON CITY, N. C.—The Bryson City Telephone Company is planning extensive improvements. Those interested in the company are as follows: J. L. Gibson, R. L. Sadige, and A. M. Fry The company is capitalized at $5,000.

WHITEVALE, Ont.—The annual meeting of the stockholders and directors of the Markham and Pickering Independent Telephone Company was held recently, at which time it was voted to further extend the company's lines both north and south.

POSTVILLE, Ia.—The Standard Telephone Company is rebuilding and repairing its toll lines. The exchange at this place is to be repaired and improved and the Decorah exchange will be rebuilt at a cost of $10,000. The headquarters of the company is Waukon.

DEFIANCE, Ohio.—Arrangements are being made for a new copper metallic circuit direct through to Toledo, which will greatly improve the service, by the Northwestern Toll Line Telephone Company. The company also contemplates other improvements.

EUFAULA, I. T.—H. Lyons, district manager of the McAlester, Eufaula Telephone Company, is making arrangements for improvements in the local system. Mr. Lyons has placed W. R. Carnahan of South McAlester in charge of the Eufaula end of the line. The local service, although good, is being improved under

the new manager's supervision and no pains or expense will be spared to give Eufaula the best local telephone system in the territory.

MALONE, N. Y.—The Adirondack Home Telephone Company at its annual meeting here yesterday decided to extend to Troy, Albany and other points. The company is in fine financial condition and has enjoyed a remarkable growth, having 1,676 telephones now in use.

KENDRICK, Idaho.—E. E. Crandall of the Interstate Telephone Company is making arrangements to put in a new telephone system in this place. All the old poles will be removed and replaced with new ones and a new metallic circuit system will be installed throughout.

KEARNEY, Neb.—The Kearney Telephone Company is making many improvements in its system, among which is the installation of a new switchboard, thus increasing the capacity of the plant 100 lines. Manager Piper reports that he has orders for at least one hundred new telephones, which he has heretofore not been able to supply.

NEW WILMINGTON, Pa.—The New Wilmington Telephone Company is preparing to connect its east and west lines with the line of the New Bedford Telephone Company near Pulaski, which will make a direct line from Youngstown, O., to Butler, Pa., and will have tributary to it ten exchanges with one thousand telephones on the county lines alone.

LINTON, Ind.—Manager Talbott of the New Home Telephone Company, which owns the exchanges at Linton, Jacksonville, Bloomfield and Switz City, and controls the exchanges at Lyons and Worthington, will spend $30,000 in the work of repairing and enlarging the exchanges at Linton, Jacksonville and Bloomfield, repairing and building new toll lines between these points.

FINANCIAL NOTES

RACINE, Wis.—Electrical Construction Company. Capital increased from $6,000 to $18,000.

DENISON, Ia.—The Crawford County Telephone Company has increased its capital stock to $120,000.

CLEVELAND, O.—The North Electrical Company has increased its capital stock from $250,000 to $1,250,000.

HORNBY, N. Y.—The Hornby Telephone Company has increased its capital stock from $2,000 to $4,000.

WASHINGTON, Kan.—The Washington Mutual Telephone Company has increased its capital stock to $10,000.

DAHLGREN, Ill.—The Dahlgren People's Telephone Company has increased its capital stock from $10,000 to $12,500.

MODOC, Ind.—The Modoc Telephone Company will increase its capital from $7,500 to $10,000 and enlarge its system.

BODIE, Calif.—The Bodie & Hawthorne Telephone & Telegraph Company has declared a dividend of 15 cents per share.

EUREKA MILLS, Va.—The Central Telephone Company has declared a 6 per cent dividend and will make extensions.

MT. PULASKI, Ill.—The Mt. Pulaski Telephone Company recently organized, has increased its capital stock to $8,000.

MADISON, Minn.—The Madison Telephone Company has declared a 5 per cent dividend on its outstanding capital stock.

SUPERIOR, Wis.—The Superior Rural Telephone Company nas been incorporated, by Geo. H. Selden and others. Capital $2,500.

EARL, Ark.—The Earl and Tyronza Telephone & Telegraph Company has increased its capital stock from $5,000 to $10,000.

COLFAX, Ia.—The Colfax Telephone Company of Colfax has amended its articles of incorporation making the capital stock $25,000.

ROCK ISLAND, Ill.—The Union Electric Telephone and Telegraph Company will increase its capital and make extensions and improvements.

DENISON, Iowa.—The Crawford County Telephone Company has increased its stock to $120,000 to provide for extensions and improvements.

WORTH, Mo.—The Worth Mutual Telephone Company has increased its capital from $10,000 to $15,000 and will make important extensions.

RALSTON, Pa.—The Ralston Telephone Company has declared a 5 per cent dividend and the company has decided to set aside a 2 per cent reserve.

OZARK, Ark.—The Home Telephone Company has declared an 85 per cent dividend. Herman Eiche is the new manager. Extensions will be made.

HUMBOLDT, Ia.—At a recent meeting of the Rural Union Telephone Company it was decided to increase the capital stock of the company to $100,000.

YORK, Nebr.—The York County Telephone Company has declared its ninth semi-annual dividend of 4 per cent. The net earnings on the amount of stock issued is equivalent to 6½ per cent for the past six months.

DECATUR, Ind.—The Citizens' Telephone Company has declared a 6 per cent dividend and authorized improvements and extensions. F. M. Schirmeyer, manager.

KEYSVILLE, Va.—At the annual meeting of the Central Telephone Company, Eureka Mills, Va. (P. O. address Keysville), a 6 per cent dividend was declared.

TABLE ROCK, Nebr.—By a recent amendment of the articles of incorporation of the Table Rock Telephone Company the capital stock has been increased to $29,000.

MT. PULASKI, Ill.—The Independent Farmers' Telephone Company will increase its capital from $8,000 to $25,000 and make important improvements and extensions.

MIDDLETOWN, Ohio.—The Middletown Telephone Company has increased its capital from $10,000 to $150,000 and will make important improvements and extensions.

PASADENA, Calif.—The Home Telephone Company promises to make extensive improvements in the near future and has increased its capital stock to $1,000,000.

WAKARUSA, Ind.—Notice has been filed by the Wakarusa Telephone Company of Elkhart county that the capital stock of the company has been increased from $10,000 to $15,000.

DANA, Ill.—The Central Illinois Independent Telephone Company of Dana has certified to an increase of capital stock from $30,000 to $75,000. C. G. Sauer of Dana is president of the company.

MCCALLSBURG, Ia.—The Short Line Telephone Company has amended its articles of incorporation increasing its capital stock from $5,000 to $10,000 and changing the place of business to Nevada, Ia.

REDLANDS, Cal.—The Southwestern Home Telephone Company has increased its bond issue to $1,000,000. Of this sum, $100,000 is to be used in payment of debts and the remainder for extensions and improvements.

JOPLIN, Mo.—At a meeting of the directors of the Home Telephone Company the first quarterly dividend of 1½ per cent was declared. The company intends in the future to declare quarterly dividends instead of annual dividends.

OMAHA, Nebr.—The Fremont Telephone Company, whose lines extend into Douglas county, has mortgaged its line for $20,000 to Richards, Keene & Co., of Fremont, and the mortgage has been placed on file at the Douglas county court house.

YARMOUTH, Nova Scotia, Canada—The Yarmouth Amalgamated Telephone Company has declared a 6 per cent dividend. A number of extensions and improvements are to be made and the capital will be increased to $50,000. C. F. Fraser, president.

SAGINAW, Mich.—A semi-annual dividend of 3 per cent has been declared by the Saginaw Valley Telephone Company on its preferred stock. A site has been purchased for its new exchange building and work will be commenced at an early date.

MINNEAPOLIS, Minn.—The directors of the Tri-State Telephone Company have declared the seventeenth quarterly dividend at the rate of 6 per cent per annum, payable September 1. The company under its guarantee will also pay the twenty-second quarterly dividend of the Twin City Telephone Company at the stipulated rate.

NEWCASTLE, Pa.—At the next meeting of the stockholders of the Plaingrove Telephone Company it is proposed to increase the capital stock of the company from $5,000 to $25,000. This is made necessary by the imperative demand for enlarging the system. When completed connection will also be made with the lines of the New Wilmington Telephone Company.

NEWTON, Ia.—At the annual meeting of the stockholders of the Jasper County Telephone Company held in this city, it was decided to increase the capital stock to $150,000 in fifteen hundred shares at par value of $100 each. Of this capital stock four hundred and fifty shares are to be issued as preferred, paying a guaranteed dividend of 8 per cent per annum, payable semi-annually.

REDLANDS, Calif.—Pursuant to a call and order of the board of directors, notice has been given that there will be a special meeting of the stockholders of the Southwestern Home Telephone Company on the 4th day of September, 1907, to consider the question of creating a bonded indebtedness upon the plant and other properties of said corporation to the amount of $1,000,000, and to provide for the creation of said bonded indebtedness.

ALEDO, Ill.—Sixty stockholders, representing ninety-eight of the one hundred forty-four shares of stock of the People's Telephone Company of Mercer county, recently held their annual meeting in this city and unanimously voted to increase the capitalization of the company to $20,000. The annual election of officers was also held and resulted as follows: President, Dr. M. G. Reynolds; vice-president, W. P. Zentmire; directors, Geo. Bell and L. N. Lewis. The large increase of the capital stock of the company was made necessary by the continued and constantly increasing demand for stock on the part of the farmers and citizens of other towns

than Aledo. The plans and specifications for the construction of the new telephone system in this place were received during the latter part of August. The plans include about three miles of cable and the most modern appliances.

NEW PHILADELPHIA, O.—The directors of the Tuscarawas County Telephone Company, with headquarters at this place, declared a four per cent dividend on the common stock at a recent meeting. The company at present has a plant that is considered one of the best in the state, and its excellent physical condition is one of the reasons for the good return which it is making on the investment. Under the direction of J. K. Johnson, general manager, a most satisfactory service is being given, as is indicated by the very healthy growth experienced, with expenses for operation and maintenance, which are said to be very low in comparison to the proportionate costs, before the rebuilding of the plant.

GRAND RAPIDS, Mich.—To care for the extensions made necessary through the rapid advancement of its business, the stockholders of the Citizens' Telephone Company at its annual meeting held recently. voted an increase in capitalization from $3,000,000 to $3,500,000. Reports for the fiscal year ending June 30 showed a net gain of instruments in the local exchange of 1,015 and in the outside exchanges of 1,424, and the indications are that the present year will show equally as good results. Within five years the gross earnings have increased from $274,343.79 to $559,908.73, and there have been disbursed the past year dividends amounting to $203,-399.71, an increase of $34,000, and $15,000 was carried to surplus. Since the company began business it has paid out $846,781.74 in dividends. The following directors were elected: John B. Martin, Charles F. Rood, E. B. Fisher, L. J. Rindge, J. B. Ware, Philip Graham, G. W. Perkins, W. J. Stuart, Cyrus E. Perkins, Edward Fitzgerald and Robert D. Graham. Officers will be elected later by the board of directors.

TRANSFERS

MEMPHIS, Mo.—The Miller Telephone Company of Corin, Mo., has been purchased by J. J. Risk of this city.

SHERIDAN, Ark.—The Sheridan Telephone Company has been purchased by Messrs. J. B. Shaw and Geo. W. Walker.

SHERWOOD, N. D.—The Loop Mutual Telephone Company has purchased the business of the Eden Valley Mutual Telephone Company.

TREMONT, Ill.—W. H. Ames has sold the Tremont Independent Telephone Exchange to Peoria parties who will improve and extend same.

FAIRFIELD, Ill.—C. S. Hilliard has secured the controlling interest in the Wayne County Telephone Company, formerly held by W. B. Spriggs.

CLAUDE, Tex.—Mr. A. P. McCubbins, who is installing a telephone system in Claude, has purchased the line extending from Conway to Panhandle.

PLATTEVILLE, Wis.—The Farmers' Telephone Company has purchased the Bloomington, Potosi, Platteville and Dodgeville lines of the Union Telephone Company.

LYME, N. H.—Ralph and Charles Pierce have purchased the New England telephone line branching off at Thetford, Vt., and are putting the same in thorough repair.

FINGAL, N. D.—M. N. Olson has purchased the Fingal telephone exchange from the North Dakota Independent Telephone Co. and will make a number of improvements.

MILWAUKEE, Wis.—C. J. Chapin, University Bldg., this city, has bought the Walworth County Telephone Company's system at Delavan, Wis., and will improve and extend same.

COLUMBUS, Ind.—The Citizens' Telephone Company has bought the Grammar Telephone Exchange and all of its lines in the Burnsville district for $5,000. The system will be improved.

SHELL LAKE, Wis.—O. H. Kjordtad and others have purchased the telephone line owned by O. H. Ingram and will improve the same and put it in first class order and use it as a toll line.

SHELBINA, Mo.—A deal has been consummated whereby Rev. J. H. Wood becomes the owner of the Shelbina Telephone Exchange, formerly owned by W. W. Tracy, for a consideration of $13,500.

HOULTON, Me.—The Independent Telephone Company here has voted to sell its lines to the Aroostook Telephone Company, which is controlled by the New England Telephone & Telegraph Company.

PEKIN, Ill.—The Citizens' Telephone Company has bought the Postal Telegraph Company's line between here and Springfield and will convert it into an up-to-date telephone line of large capacity.

NORTH JUDSON, Ind.—The North Judson Telephone Exchange, formerly owned by Geo. M. and Oscar Seybold, of Logansport, Ind., has been sold to John H. Wilkinson, of Flora, Ind., who will place it in up-to-date condition.

DOWAGIAC, Mich.—The Cass County Home Telephone Company, this city, has bought the Cassipolis and Marcellus telephone plants, embracing over 600 telephones. The Home company will further extend and improve its system.

DELAVAN, Wis.—Mrs. Lizzie Hackney has transferred her principal stock in the Walworth County Telephone Company to C. J. Chapin, secretary of the Milwaukee Independent Telephone Company, who will greatly improve the system.

GARDEN CITY, Kans.—F. R. Marsh has purchased the Garden City Telephone, Light and Manufacturing Company, and is now sole owner of the concern. The property will be greatly improved and additions will be made to the plant and telephone lines.

APPLETON, Wis.—The Fox River Valley Telephone & Telegraph Company, which already controlls the exchanges at Green Bay, Appleton and Waupaca, has bought the Wolf River Telephone Company and its exchanges at Weyauwega, New London, etc.

TOPEKA, Kan.—The Kansas and Colorado Toll Line Company, a new organization composed of the owners of the Goodland Telephone Company, has purchased the short line from Brewster to Colby and made arrangements to connect with the Central State company at Colby.

PARIS, Ill.—A deal has been completed whereby Milton Collier, of Dana, Indiana, has acquired the properties of the Embarrass Telephone & Telegraph Company, including the exchanges at Boston, Isabel, Redmon, Oakland and Kansas. The telephone properties are valued at $57,000.

ELYRIA, Ohio.—The new Mutual Telephone Company, represented by G. A. Berold, R. Squire and J. E. Rundel, have bought the plants of the Columbia Telephone Exchange and the Elyria Southern Telephone and Toll Company. Extensions and improvements will be made.

MIDDLETOWN, Ill.—Frank Marbold of Greenview has purchased the stock of the Middletown Mutual Telephone Company and will proceed to at once install a first-class telephone system in the east side of the county. The directors of the company are as follows: H. A. Binns, A. L. Denton, Johnathon Lloyd and William Behrens.

ONEONTA, Ala.—The Oneonta Telephone Company has sold its line from Oneonta to Hunt, via Rosa, Cleveland and Blountsville, to the Blount County Consolidated Telephone Company. This gives the Consolidated company about seventy-five miles of line in Blount county and reaches the principal points in the northern and eastern parts of the county.

LESLIE, Mich.—The Leslie Telephone Company which has just installed a new switchboard in this city, has purchased the Wing lines and interest in the Henrietta exchange, also a controlling ininterest in the Rives exchange. The company is now completing a line into Jackson, and expects to build a line connecting Munith, Stockbridge, Fitchburg and Bunker Hill with Leslie.

GRIDLEY, Ill.—At a recent meeting of the stockholders of the Fifer Telephone Company it was decided to accept an offer for its property in Money Creek township, which includes the switchboard at Towanda, all the right of way, poles, wires, etc., and a new company has been organized to be know as the Money Creek Telephone Company, to take over the property. Among the stockholders in the new company are the following: George E. Brown, W. H. Potts, J. M. Barnard, William Killion and others.

HIGHLAND, Ill.—The Farmers' & Merchants' Telephone Company has changed hands and the system is now owned by the following persons, all equally interested: Philip Baer, of St. Jacob; C. T. Pabst, Michael Matter, A. P. Mosimann, L. O. Kuhnen, H. J. Buchheim, and J. N. Stowes of Highland. The following officers have been elected: President, A. P. Mosimann; vice-president, H. J. Buchheim; secretary and treasurer, C. T. Pabst. The company already has more than one hundred instruments installed and the list will be increased as rapidly as possible.

OSHKOSH, Wis.—Through the acquisition by the Fox River Valley Telephone and Telegraph Company of the plant formerly owned and operated by the Wolf River Telephone Company, the affairs of the latter company have been wound up and finally adjusted to the satisfaction and financial interest of everybody concerned, it is stated, and the company has gone out of business. This was brought about by the sale of the Interurban company of Sun Prairie, which had previously absorbed the property and franchises of the Wolf River company, to the Fox River Valley Telephone and Telegraph Company, and the payment by the latter of a balance of $3,755.54 to John F. Kluwin of this city, receiver of the Wolf River company. All debts were paid and there is the sum of $2,551.93 to be divided among the stockholders. The Fox River Valley company has its headquarters in Appleton.

COMBINATIONS

LANCASTER, Wis.—The Union Telephone Company of Lancaster has been taken over by the Farmers' Telephone Company.

HENDERSON, Ky.—The Henderson Telephone & Telegraph Company will consolidate with the Central Home Telephone Company. About $50,000 will be expended on improvements and underground

wires will be put down on several blocks. Lines will be extended in the towns of Spottsville and Corydon.

CARBONDALE, Ill.—At a recent meeting of the directors of the Farmers' League and Community Telephone Company it was decided to unite this company with the Farmers' Mutual Telephone Company of Wolf Lake.

LEGAL ITEMS

NEW YORK.—A bill is to be presented to the next legislature, giving power to electors of Greater New York to vote for burial of all electric light, power, telephone and telegraph wires within the next five years.

PORTLAND, Me.—Frank E. Ebersole, vice-president and general manager of the Northeastern Telephone Company, the largest Independent telephone company in New England, which operates 10,000 miles of wire and 300 miles of toll lines and serves 7,000 subscribers in Maine, has been appointed receiver of that company in mortgage foreclosure proceedings brought by the bondholders. His indemnity bond was placed at $20,000.

UNDERGROUND CONSTRUCTION

TULSA, I. T.—The city has decided that all wires must be placed underground.

WAHPETON, N. D.—All telephone wires will be placed underground in this city.

WOODBURY, N. J.—The Eastern Telephone Company will place its wires under ground in this city.

HOUSTON, Texas.—The new Home Automatic Telephone Company will put all wires underground.

NEWCASTLE, O.—The Union Telephone Company will place many of its wires underground in this city.

APPLETON, Wis.—A resolution has been passed by the city council ordering all telephone wires placed underground.

INDIANAPOLIS, Ind.—Mayor Bookwalter will issue an order for all telephone companies to place their wires underground.

APPLETON, Wis.—The city council is considering the advisability of compelling all telephone companies to place their lines underground.

ELMIRA, N. Y.—The mayor and Board of Public Works are considering the advisability of compelling telephone and telegraph companies to place their wires underground.

WASHINGTON, D. C.—Gen. James Allen, chief signal officer, U. S. A., contemplates a system of underground wire service for telephones at all of the military posts of the United States.

PERSONAL MENTION

J. P. Baker has resigned as manager of the Farmington (Ill.) Telephone Company.

W. N. Harris of Corning has closed a contract to manage the telephone system at Harrisburg.

John Mangan has resigned as foreman for the Zanesville (O.) Telephone and Telegraph Company.

O. A. Nelson is now manager of the Home Mutual Telephone Company, Kidder, Mo., vice A. J. Spangler, resigned.

C. R. Beebee has been made manager of the Bell exchanges at Peru, Wabash, Leedsville, Bunker Hill and Logansport, Ind.

H. C. Slemin, of the Stromberg-Carlson Telephone Manufacturing Company, Rochester, paid a visit to Chicago in September.

James W. King, manager of the Citizens' Telephone Company, of Columbus, Ind., has resigned and will move to the state of Washington.

T. Kerr is now general manager of the Kankakee Independent Telephone Company, succeeding A. J. Vernier, now manager of the Pontiac Company.

The mother of W. E. A. Nottorf, wire chief of the Topeka Independent Telephone Company, died at her home in Abilene, Kas., September 4, 1907.

Charles Dodge, formerly foreman of the Southern New England Telephone and Telegraph Company's construction forces at Canaan, Conn., has been promoted to a good position at Waterbury, Conn.

Gustav F. C. Bauer, sales engineer of the Century Telephone Construction Company, Buffalo, was called to Chicago the latter part of August to attend the funeral of a sister who was stricken very suddenly.

J. C. Murphy, former manager of the North Dakota Independent Telephone Company's plant at Bismarck, is now manager of the company's office at Fargo, N. D., succeeding Hugh L. Peoples, resigned.

Philip H. Cole, formerly with the National Telephone Company, London, recently visited Chicago while en route to China, where he will take charge of the Shanghai Mutual Telephone Company and its affairs.

On September 4, at 7:30 p. m., David Clayton Lingo, sales agent for the Monarch Telephone Manufacturing Company, Chicago, with a branch house at Dallas, Texas, was united in marriage to Miss May Evans, of Ft. Worth, Texas.

William R. Westcott, retiring manager of the Manchester, N. H., telephone exchange, was presented on the eve of his departure with a traveling bag and a silver-mounted toilet set by the employes who had been under his direction.

John D. McLeod, vice-president and for many years general manager of the Wisconsin Telephone Company at Milwaukee, has retired, as has also the late general manager, E. B. Cottrill. Harry O. Seymour has been appointed assistant general manager.

Edward C. Stoeffhaas, superintendent of the factory of the Premier Electric Company, Chicago, enjoys eight years' of experience in all departments of telephone manufacturing and as an installer. The past five years have especially qualified him for his present work.

Charles J. Haines, father of J. Allen Haines, vice-president of the Western Wire Sales Company of Chicago, died suddenly of heart disease in Chicago, August 29. Mr. Haines was a pioneer resident of Chicago and a prominent business man of the city. He was 61 years of age.

M. B. Overly, general manager of the Central Home Telephone Company and the Long Distance Telephone and Telegraph Company, has resigned to engage in other business in Cleveland, O. L. G. Parker, auditor of the Central Home Telephone Company, has been appointed to fill the vacancy.

Heber J. Grant has been elected president of the Utah Independent Telephone Company, vice Heber M. Wells, resigned. This is a step toward the reorganization of the Utah company. Mr. Grant is president of Heber J. Grant & Company and the Home Fire Insurance Company, of Utah.

Amos A. Geiger, who installed the first system of the Bluffton (O.) Telephone Company some ten years ago, and who has for the past several years been superintendent of the United Telephone Company at Bellefontaine, has accepted a position with the United States Telephone Company at Cleveland.

Frank L. Middleton, who left Chicago in July to represent the Automatic Electric Company in Oklahoma and Indian Territory, with headquarters at Tulsa, recently paid a visit to his old Chicago friends. Mr. Middleton will install a new system at Tulsa to compete with the Pioneer T. & T. Company.

G. H. Triplett, local manager of the exchange of the Bell County Independent Telephone Company at Temple, Texas, for the past two years, has been transferred to the Houston offices of the company and is succeeded at Temple by Guy Bryant, manager of the Independent exchange at Nacogdoches.

O. A. Cole, who has been elected assistant general manager of the Bureau County Telephone Company at Princeton, Ill., started at the bottom of the ladder when he entered the telephone field and has advanced step by step until he is now in charge of one of the most prosperous Independent lines in the state.

Avery P. Eckert has accepted the general sales management of the Duplex Metals Company, Chester, Pa., with New York offices at 208 Fifth avenue. Mr. Eckert has been sales manager of the Safety Insulated Wire and Cable Company, of New York, for many years and is one of the pioneers in the manufacture and sale of insulated wires and cables.

David E. Evans, former president of the Maryland Telephone Company, who died recently at Baltimore, was born in Wales, fifty-seven years ago. He was prominent as a consulting electrical engineer and as a builder of railways, and while a young man in Wales won the praise of Queen Victoria for his heroic rescue of a party of miners cut off below ground by a rush of water.

Z. A. Cahoon, manager of the New England Telephone Exchange at Chelsea, Mass., has been transferred to the position of manager of the larger exchange at Malden. Mr. Cahoon is to be succeeded by G. P. Norwell, of Winchester. Mr. Norwell has been with the company for four years, having started in with the students' course and working his way upward. He has been the manager for the Stoneham and Winchester exchanges.

Mr. Harry De Steese, of New York City, has recently been appointed eastern representative by the International Timber Preserving Company, of Chicago, manufacturers of the public-service timber preserver, "Neosote." For sixteen years Mr. De Steese has been identified with various branches of public-service work, both in this country and in Europe. His earliest experience was gained under Postmaster General Payne at Milwaukee, and from 1896 to 1900 he was manager of the railway department of the Western Electric Company, of New York, leaving that position to take charge of the establishment of a supply business in London, Eng-

land. Mr. De Steese's friends will be glad to learn of his new connection, and the International Timber Preserving Company is to be congratulated on having secured so able and energetic a representative.

Edgar C. Bradley has been elected vice-president and general manager of the Pacific Telephone and Telegraph Company, succeeding Emil J. Zimmer. Mr. Bradley will have charge of all matters pertaining to the affairs and business of the company and his office will be in San Francisco. Mr. Bradley resigned in August, 1906, as second vice-president of the Postal Telegraph-Cable Company to accept a leading position on the staff of President Vail of the American Telephone and Telegraph Company. He superintended the reconstruction of the Pacific company's lines, rehabilitating that portion of the system destroyed by the earthquake and fire.

MISCELLANEOUS

LEDUC, Alb., Can.—A system of government telephones will be installed in Leduc in the near future.

CAMERON, Tex.—The citizens of this place are considering the advisability of organizing an Independent telephone company.

DONNELLY, Minn.—The farmers of this town and Eagle Point have organized a mutual telephone company, with Mr. Maddy as president.

TWIN FALLS, Idaho.—Farmers in this vicinity are organizing a company to build telephone lines from this place to Minidoka, Boise, Pocatello and Salt Lake.

VENUS, Tex.—T. A. Atkinson and J. A. Russell are arranging for the construction of the new telephone system which will be installed by the citizens of this place.

FLORENCE, Ore.—Capt. Martin of the U. S. Life Saving Service states that a telephone line will be built from the life saving station to Gardiner, and also a line to Florence.

KENSINGTON, Minn.—The citizens of this place are trying to organize a telephone company. Messrs. Lund and August Anderson are said to be interested in the project.

ANACONDA, Mont.—The Anaconda Telephone Company's system has been entirely overhauled and new instruments installed, making it now a common battery system.

BRINSMADE, N. D.—The name of the Brinsmade-Normania Telephone line has been changed to the Normania Farmers' Telephone Company. Work on the system has commenced.

FORT RILEY, Kans.—Plans are under way for the installation of a complete telephone service at Fort Riley. Capt. W. S. McNair, signal officer of the post, is interested in the project.

CATLIN, Ill.—There is a movement on foot to install a mutual or co-operative telephone exchange in this place. Many prominent business men and others are said to be behind the project.

IVANHOE, Minn.—A local telephone company is to be organized here. Geo. Graff, P. A. Paulson, L. P. Johnson have been appointed a committee to make an estimate of the probable cost.

INDIANAPOLIS, Ind.—The New Long Distance Telephone Company, following the recent action of the Central Union Company, has announced that night rates have been abolished on all its toll lines.

EVANSTON, Wyo.—The Hilliard Telephone Company, which was recently organized with Chas. A. Stone as president, is constructing a line from Evanston to Hilliard. The capital stock of the company is $2,000.

NORWICH, N. D.—A co-operative telephone company has been organized at Norwich and will build to Velva. Nearly all the farmers along the line of the proposed system have taken stock in the company.

WINNIPEG, Man.—Plans are being prepared for the erection of a new telephone exchange by the Government Telephone, Telegraph and Railway Department. It is estimated that the system will cost about $100,000.

FARMLAND, Ind.—The Farmland Telephone Company will move its headquarters to a new building recently purchased for the purpose. In addition 3,500 feet of new cable will be installed and other improvements made.

DECATUR, Ill.—The Home Telephone Company, which recently purchased the Macon County Telephone Company, has purchased a site at a cost of $12,000 and will erect a new building for the use of the company.

DINWIDDIE, Va.—At a meeting of a number of citizens of this town it was decided to organize a telephone company with a central office at DeWitt, and from this point to render service to all sections of the country.

MANKATO, Minn.—The Mankato Citizens' Telephone Company, which started business with 200 telephones, now has 1,600 telephones in operation in this city and 150 at Mapleton. The officers of the company are as follows: President, H. A. Patterson; vice-president, Nic Peterson; secretary-treasurer, W. D. Willard; attorney, W. A. Funk; manager, M. W. Koons.

SPOKANE, Wash.—W. E. Herring, of Washington, D. C., construction engineer of the Bureau of Forestry, is here and announces that $70,000 will be expended upon telephone systems to protect the reserves of the Northwest.

DILLON, Mont.—The Centennial Telephone Company, recently incorporated, has now opened its lines for business. The lines of the company extend to Lakeview from Monida, taking in all the principal ranches on the route.

AUBURN, Ind.—Among the many improvements being made by the Home Telephone Company is the installation of a new switchboard, and it is thought this will not meet the demands of the company's rapidly growing business.

SAN BERNARDINO, Cal.—Work will begin in the early fall on a complete telephone system between all forest ranger camps in the San Bernardino national forest reserve. Work will be done at the expense of the government.

GRAND RAPIDS, Mich.—S. Edwards, manager of the Canadian telephone service with headquarters at Edmonton, Province of Alberta, Canada, is inspecting U. S. systems to decide upon what apparatus and supplies to purchase.

BANCROFT, S. D.—An Independent telephone company to be owned by citizens of Bancroft has been organized. Work on the construction of its system will begin at once, and connection will be established with a number of farmers' lines.

HAMILTON, Ohio.—C. W. De Armond of this city is said to have secured an option on the Harrison Telephone Company of Harrison, a suburb of Cincinnati. Its acquisition will give the Independents their long-desired entrance into Hamilton county.

DES MOINES, Ia.—The Mutual Telephone Company is reorganizing in accordance with the amended articles of incorporation filed several weeks ago. This is preparatory to the big merger soon to be formed of all Iowa mutual concerns of importance.

GAIL, Tex.—A telephone exchange is now being installed here by the Staked Plains Telephone Company, with headquarters at Lubbock. The main line of the company is also being extended to Post City, county seat of the newly organized county of Garza.

DIKE, Ia.—W. P. Walker of Cedar Falls is interested in the promotion of a farmers' telephone line in the vicinity of Dike and in company with E. B. Roush recently canvassed the situation, meeting with enough encouragement to make the line a certainty.

CRYSTAL CITY, Man., Can.—A new switchboard has been installed by the Louise Telephone Company. Crystal City, Clearwater, Snowflake and Pilot Mound are now connected; a new line is being built to Mather, and connections are to be established with Purves and Mowbray.

BRANTFORD, Ont.—General Manager MacKay of the Canada Machine Telephone Company states that his company will have an automatic system in operation in this city by the end of the year. The company has purchased a site on Queen street and will erect an $8,000 office.

SPARTA, Wis.—The Sparta Telephone Company has recently completed the construction of a new pole and trunk line from this city to Cashton which will materially improve the service between the two places. Numerous other improvements and new lines are contemplated in the near future.

OKLAHOMA CITY, Okla.—Agents of the Kinloch Telephone Company of St. Louis, Mo., have been investigating telephone conditions in Oklahoma City and have taken steps looking toward application for a franchise. It is the purpose of the company to establish city systems in several Oklahoma towns.

WILLARD, N. Mex.—A new telephone plant is being installed at this place. The work is being done by H. A. Hart of Santa Fe, N. M., who is also the promoter of the stock company, which will handle the system. The company will build toll lines connecting with Estancia and Mountain Air, N. M.

BURGESSVILLE, Ont.—The Burgessville Telephone Company is building a number of new lines and is changing its whole system to metallic. Connections have already been established with Ingersoll and Harrietsville and plans are being considered for connection with Buffalo and other New York cities.

CHESAW, Wash.—The ranchers living southwest of Chesaw and who recently organized the Farmers' Independent Rural Telephone Company are constructing a telephone line in that vicinity. Local parties are also constructing a line extending out from this place. Siimlar lines are being built all over the county on account of the poor service being given by the Pacific States company.

SANTA MONICA, Cal.—The Home Telephone Company is installing a new switchboard and otherwise improving and extending its system. The company now has approximately one thousand telephones in service here, according to Manager Ordway, and has orders ahead all the time. The Home company has only been in service two years and it has doubled its service during the past year.

ITEMS FROM THE RURAL LINE DISTRICTS

Illustrated by O. H. Brandenburg

H. N. Meewes, the Tipton telephone man, was in town again this morning in his little buz wagon.—*Bennett (Ia.) Opinion.*

The Farmers' Exchange telephone is all the talk in this neighborhood at present.—*Clay Pike Items Cambridge (O.) Jefferson.*

A new telephone line is to be installed in this vicinity. Ring up your old neighbors.—*Parmelee Correspondence Hastings (Mich.) Banner.*

Carl Boller has concluded that it is about time to secure stock in the Highland Telephone Company, and will go on the north wire.—*Beatrice (Neb.) Democrat.*

The telephone line being built from Gage to Chaney is moving very slowly. Hurry up. We have something to say and would like to talk.—*Woodward (Okla.) News.*

Jake Heyman, our telephone man, put in a phone at the residence of our city mayor, Noah Sanderson, this morning. Jake is busy about all the time.—*Holton (Kas.) Recorder.*

W. H. Kugler, manager of the Green River Telephone Company, transformed himself into a lineman last week and straightened some of the kinks in the wires.—*Sterling (Ill.) Gazette.*

The Frog Alley Telephone line is now connected with central. At present there are thirteen lines in the switchboard, only two of which are toll lines.—*Towanda Correspondence Bloomington (Ill.) Bulletin.*

The Winfield Telephone Company have put in a new line just east of Wyman. Claud McCoy, Susie Hutchinson, Jim Stratton, Howard Griffith, Bas Hutchinson and John Evans all went on the new line.—*Wyman Whispers Columbus Junction (Ia.) Gazette.*

Herman Vogel left here Friday night for Lake Preston, S. D., where he has a position as manager of the local branch of the South Dakota Telephone Company. It is a good position, and we wish Herman all the success possible in his new home.—*Boscobel (Wis.) Sentinel.*

HERE'S ONE THAT'LL MAKE 'EM HOWL
GREAT SCOTTH WHEN WILL THIS NONSENSE CEASE
COME HERE AND FINISH YOUR JOB AND GIVE THAT DARNED MACHINE A REST
GIVE 'EM THE ARKINSAW TRAVELER ED
Brandenburg

The farmers, who are telephone patrons of the line around Central Square, are threatening to have the 'phones taken from their homes, because what was the principal use of the instrument to them has been taken from them by a recent order of the manager. It is said that Edwin Church, the town barber, some time ago purchased a phonograph and to give his friends and neighbors the benefit of this purchase, arranged a contrivance by which the music was conveyed into the instrument and thereby conducted to the patrons of the line, furnishing entertainment to them during the long winter evenings. A business man, in a hurry, wanted to use his telephone recently, but when he took the receiver down he was greeted with the strains of the latest rag-time march. The result was a letter to the management and the sending forth of the order that the farmers' chief amusement must cease.—*Pulaski (N. Y.) Democrat.*

FROG LEGS? WELL I GUESS WE WILL!
NOW GENTLEMEN JUST STEP INTO THE DINING ROOM AND PARTAKE OF SOME DELICIOUS FROG LEGS
Brandenburg

Ten of the employes of the Home Telephone Company of Detroit were royally entertained by M. A. Porter here Saturday night. A feature of the affair was a frog leg supper at the Park Hotel. Everybody had a jolly good time.—*Northville (Mich.) Record.*

The telephone line is beginning to look quite enterprising. The chief thing lacking now is putting the phones into the houses, and that will soon be done.—*East Townsend Letter, Norwalk (Ohio) Reflector.*

The Great Bend Telephone Company are putting on the finishing touches to the line. It is a great thing for our town and brings the farmers closer in touch with the business men.—*Hankinson (N. D.) News.*

George Bean has resigned his position as manager of the Farmers' Telephone Company and moved out on the Mike Kelley farm Thursday, which he will work for the coming year.—*Woonsocket (S. D.) Herald.*

The telephone men are hard at work here and have come down from the north. The poles and cross arms and everything has been set and we can hear hello on the poles now.—*Camden (N. D.) Democrat.*

M. L. Golliday, superintendent of the Holden Telephone Company, was out looking after the line Monday afternoon and took supper at Porter Murray's.—*Dark Corner Correspondence Warrensburg (Mo.) Democrat.*

Miss Flossie Quigley of Napoleon, who worked here at the Freeman house, has accepted a position with the Washtenaw Home Telephone Company at Ann Arbor.—*Manchester Correspondence Jackson (Mich.) Patriot.*

The Lanark Mutual Telephone Company has added a number of stockholders lately to their already large number. Some of those who have invested are David Miller, Harry Colver, Landt Bros. and Puterbaugh sisters.—*Polo (Ill.) Press.*

The telephone lines are crossed quite often near this place and you can talk to any one on both lines through the county. It makes it quite interesting at times when you wish to call up any one.—*Sugar Grove Letter, Ludington (Mich.) Record.*

John Barney has bought the share in the home telephone line that was owned by William Brough, who some time ago moved out of this neighborhood. We suppose that John will soon understand what "rubber" means.—*Crown Point (Ind.) Register.*

The Boone County Telephone Company has been busy the last week setting poles for the Gentleman's line in N. E. Dodge. The new line ought to be in operation shortly, when the Rubber Line will probably go out of commission.—*Boone (Ia.) Democrat.*

The automobile telephone service, which is the service of the future, will relieve busy bodies of a great deal of listening to other people's conversations. By this system one makes his own connections and there is not even an intervening "central" girl. It's the system that is now being generally installed.—*Freeport (Ill.) Standard.*